CDP-CX53

SERVICE MANUAL

US Model
Canadian Model
AEP Model
E Model
Australian Model

Model Name Using Similar Mechanism	CDP-CX50/CX571
CD Mechanism Type	CDM-46C2
Base Unit Type	KSM-213BFN/M-NP
Optical Pick-up Type	KSS-213B/S-N

SPECIFICATIONS

Compact disc player

Laser	Semiconductor laser (λ = 780 nm) Emission duration: continuous
Laser output	Max 44.6 µW* * This output is the value measured at a distance of 200 mm from the objective lens surface on the Optical Pick-up block with 7 mm aperture.
Frequency reponse	2 Hz to 20 kHz ± 1dB
Signal-to-noise ratio	More than 100 dB
Dynamic range	More than 88 dB
Harmonic distortion	Less than 0.013%
Channel separation	More than 95 dB

Output

	Jack type	Maximum output level	Load impedance
LINE OUT	Phono Jacks	2V (at 50 kilohms)	Over 10 kilohms
DIGITAL OUT (OPTICAL)	Optical output connector	–18 dBm	Wave length: 660 nm

General

Power requirements

Where purchased	Power requirements
USA/Canada	120 V AC, 60 Hz
Australia	240 V AC, 50 Hz
Europe	220 V – 230 V AC, 50/60 Hz
Other countries	110 V – 120 V or 220 V – 240 V AC, adjustable, 50/60 Hz

Power consumption	12 W
Dimensions (approx.) (w/h/d)	When the front cover is closed 430 × 182.5 × 295 mm (17 × 7 1/4 × 11 5/8 in.) incl. projecting parts When the front cover is open 430 × 182.5 × 414 mm (17 × 7 1/4 × 16 3/8 in.) incl. projecting parts
Mass (approx.)	5.2 kg (11 lbs 8 oz)

Supplied accessories

Audio cord (2 phono plugs – 2 phono plugs) (1)
CONTROL A1 cord (supplied for Canadian models only) (1)
Remote commander (remote) (1)
Sony SUM-3 (NS) batteries (2)
CD booklet holder (1)
Label (1)

Design and specifications are subject to change without notice.

COMPACT DISC PLAYER

MICROFILM

SONY®

TABLE OF CONTENTS

1. SERVICING NOTE 3

2. GENERAL 4

3. DISASSEMBLY 5

4. TEST MODE 9

5. MECHANICAL ADJUSTMENTS 12

6. ELECTRICAL ADJUSTMENTS 15

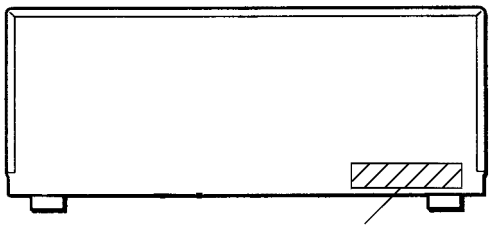
7. DIAGRAMS 17

7-1. Printed Wiring Board – BD Section – 19
7-2. Schematic Diagram – BD Section – 21
7-3. Printed Wiring Board – Audio Section – 23
7-4. Schematic Diagram – Audio Section – 25
7-5. Printed Wiring Boards – Panel Section – 27
7-6. Schematic Diagram – Panel Section – 29
7-7. Printed Wiring Board – Sensor/Motor Section – 31
7-8. Schematic Diagram – Sensor/Motor Section – 33
7-9. IC Pin Function Description 37

8. EXPLODED VIEWS 43

9. ELECTRICAL PARTS LIST 49

MODEL IDENTIFICATION
— BACK PANEL —

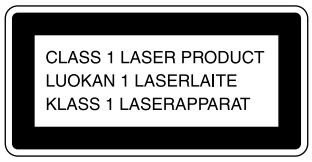


PARTS No.	MODEL
4-997-124-01	US model
4-997-124-11	Canadian model
4-997-124-21	AEP, AED model
4-997-124-31	Australian model
4-997-124-41	E model
4-997-124-51	Singapore model

• Abbreviation
AED: North Europe

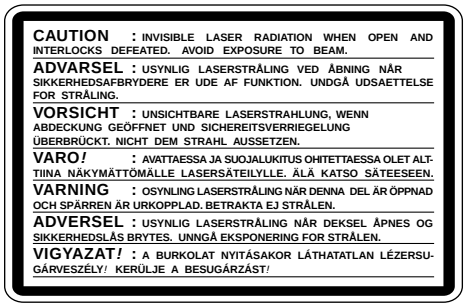
CAUTION
Use of controls or adjustments or performance of procedures other than those specified herein may result in hazardous radiation exposure.

The laser component in this product is capable of emitting radiation exceeding the limit for Class 1.



This appliance is classified as a CLASS 1 LASER product. The CLASS 1 LASER PRODUCT MARKING is located on the rear exterior.

(Except for the customers in the United States and Canada)
The following caution label is located inside the unit.


CAUTION : INVISIBLE LASER RADIATION WHEN OPEN AND INTERLOCKS DEFEATED. AVOID EXPOSURE TO BEAM.
ADVARSEL : USYNLIG LASERSTRÅLING VED ÅBNING NÅR SIKKERHEDSAFBRYDERE ER UDE AF FUNKTION. UNDGÅ UDSAETTELSE FOR STRÅLING.
VORSICHT : UNSICHTBARE LASERSTRAHLUNG, WENN ABDECKUNG GEÖFFNET UND SICHEREITSVERRIEGELUNG ÜBERBRÜCKT. NICHT DEM STRAHL AUSSETZEN.
VARO! : AVATTAESSA JA SUOJALUKITUS OHITETTAESSA OLET ALTTIINA NÄKYMÄTTÖMÄLLE LASERSÄTEILYLLE. ÄLÄ KATSO SÄTEESEEN.
VARNING : OSYNLING LASERSTRÅLING NÄR DENNA DEL ÄR ÖPPNAD OCH SPÄRREN ÄR URKOPPLAD. BETRAKTA EJ STRÅLEN.
ADVERSEL : USYNLIG LASERSTRÅLING NÅR DEKSEL ÅPNES OG SIKKERHEDSLÅS BRYTES. UNNGÅ EKSPONERING FOR STRÅLEN.
VIGYAZAT! : A BURKOLAT NYITÁSAKOR LÁTHATATLAN LÉZERSUGÁRVESZÉLY! KERÜLJE A BESUGÁRZÁST!

For the customers in Canada

CAUTION
TO PREVENT ELECTRIC SHOCK, DO NOT USE THIS POLARIZED AC PLUG WITH AN EXTENSION CORD, RECEPTACLE OR OTHER OUTLET UNLESS THE BLADES CAN BE FULLY INSERTED TO PREVENT BLADE EXPOSURE.

SECTION 1
SERVICING NOTES

SAFETY CHECK-OUT

After correcting the original service problem, perform the following safety check before releasing the set to the customer:
Check the antenna terminals, metal trim, “metallized” knobs, screws, and all other exposed metal parts for AC leakage.
Check leakage as described below.

LEAKAGE

The AC leakage from any exposed metal part to earth ground and from all exposed metal parts to any exposed metal part having a return to chassis, must not exceed 0.5 mA (500 microampers.). Leakage current can be measured by any one of three methods.

1. A commercial leakage tester, such as the Simpson 229 or RCA WT-540A. Follow the manufacturers’ instructions to use these instruments.
2. A battery-operated AC milliammeter. The Data Precision 245 digital multimeter is suitable for this job.
3. Measuring the voltage drop across a resistor by means of a VOM or battery-operated AC voltmeter. The “limit” indication is 0.75 V, so analog meters must have an accurate low-voltage scale. The Simpson 250 and Sanwa SH-63Trd are examples of a passive VOM that is suitable. Nearly all battery operated digital multimeters that have a 2 V AC range are suitable. (See Fig. A)

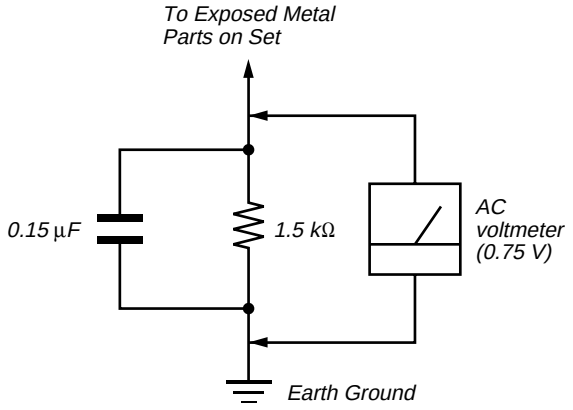


Fig. A. Using an AC voltmeter to check AC leakage.

NOTES ON HANDLING THE OPTICAL PICK-UP BLOCK OR BASE UNIT

The laser diode in the optical pick-up block may suffer electrostatic break-down because of the potential difference generated by the charged electrostatic load, etc. on clothing and the human body.
During repair, pay attention to electrostatic break-down and also use the procedure in the printed matter which is included in the repair parts.
The flexible board is easily damaged and should be handled with care.

NOTES ON LASER DIODE EMISSION CHECK

The laser beam on this model is concentrated so as to be focused on the disc reflective surface by the objective lens in the optical pick-up block. Therefore, when checking the laser diode emission, observe from more than 30 cm away from the objective lens.

LASER DIODE AND FOCUS SEARCH OPERATION CHECK

Carry out the “S curve check” in ”CD section adjustment” and check that the S curve waveform is output repeatedly.

SAFETY-RELATED COMPONENT WARNING!!

COMPONENTS IDENTIFIED BY MARK ⚠ OR DOTTED LINE WITH MARK ⚠ ON THE SCHEMATIC DIAGRAMS AND IN THE PARTS LIST ARE CRITICAL TO SAFE OPERATION. REPLACE THESE COMPONENTS WITH SONY PARTS WHOSE PART NUMBERS APPEAR AS SHOWN IN THIS MANUAL OR IN SUPPLEMENTS PUBLISHED BY SONY.

ATTENTION AU COMPOSANT AYANT RAPPORT À LA SÉCURITÉ!

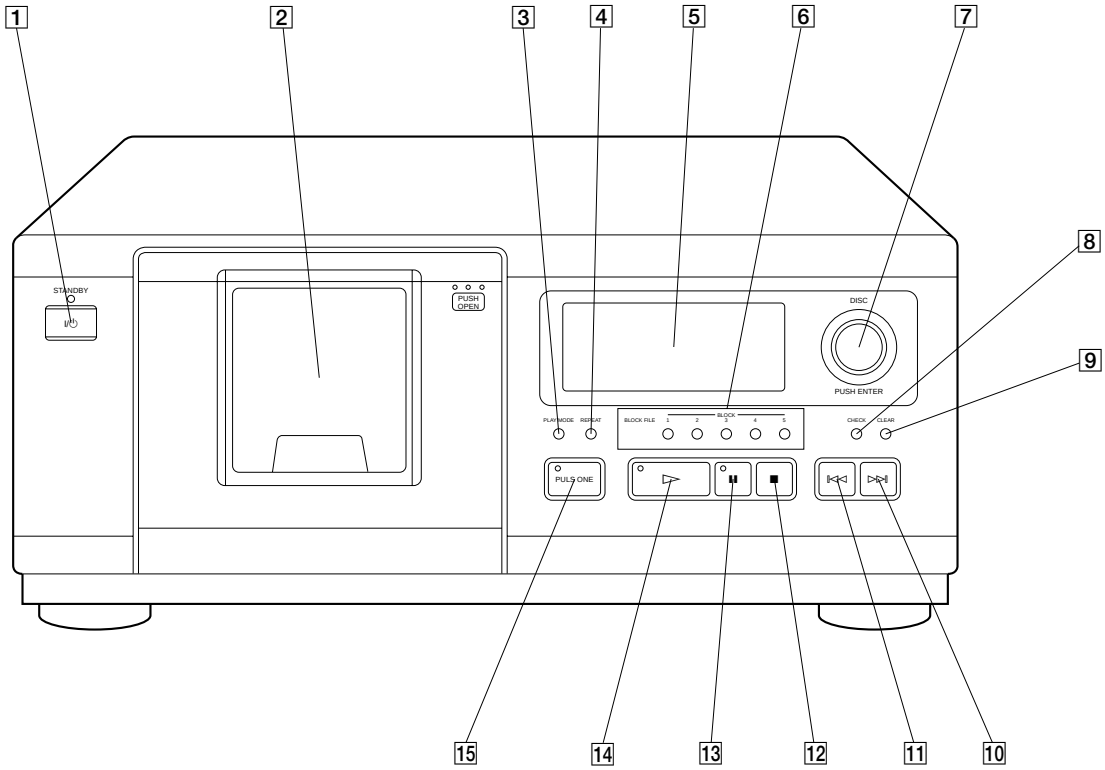
LES COMPOSANTS IDENTIFIÉS PAR UNE MARQUE ⚠ SUR LES DIAGRAMMES SCHÉMATIQUES ET LA LISTE DES PIÈCES SONT CRITIQUES POUR LA SÉCURITÉ DE FONCTIONNEMENT. NE REMPLACER CES COMPOSANTS QUE PAR DES PIÈCES SONY DONT LES NUMÉROS SONT DONNÉS DANS CE MANUEL OU DANS LES SUPPLÉMENTS PUBLIÉS PAR SONY.

This section is extracted from instruction manual.

SECTION 2
GENERAL

LOCATION OF PARTS AND CONTROLS

Front Panel



1 I/⏻ (power switch) button
2 Front cover
3 PLAY MODE button
4 REPEAT button
5 Display window
6 BLOCK 1-5 buttons
7 DISC PUSH ENTER knob
8 CHECK button
9 CLEAR button
10 ▷▷I button
11 I◁◁ button
12 ■ button
13 ❚❚ button
14 ▷ button
15 PLUS ONE button

SECTION 3
DISASSEMBLY

Note: Follow the disassembly procedure in the numerical order given.

CASE, FRONT PANEL

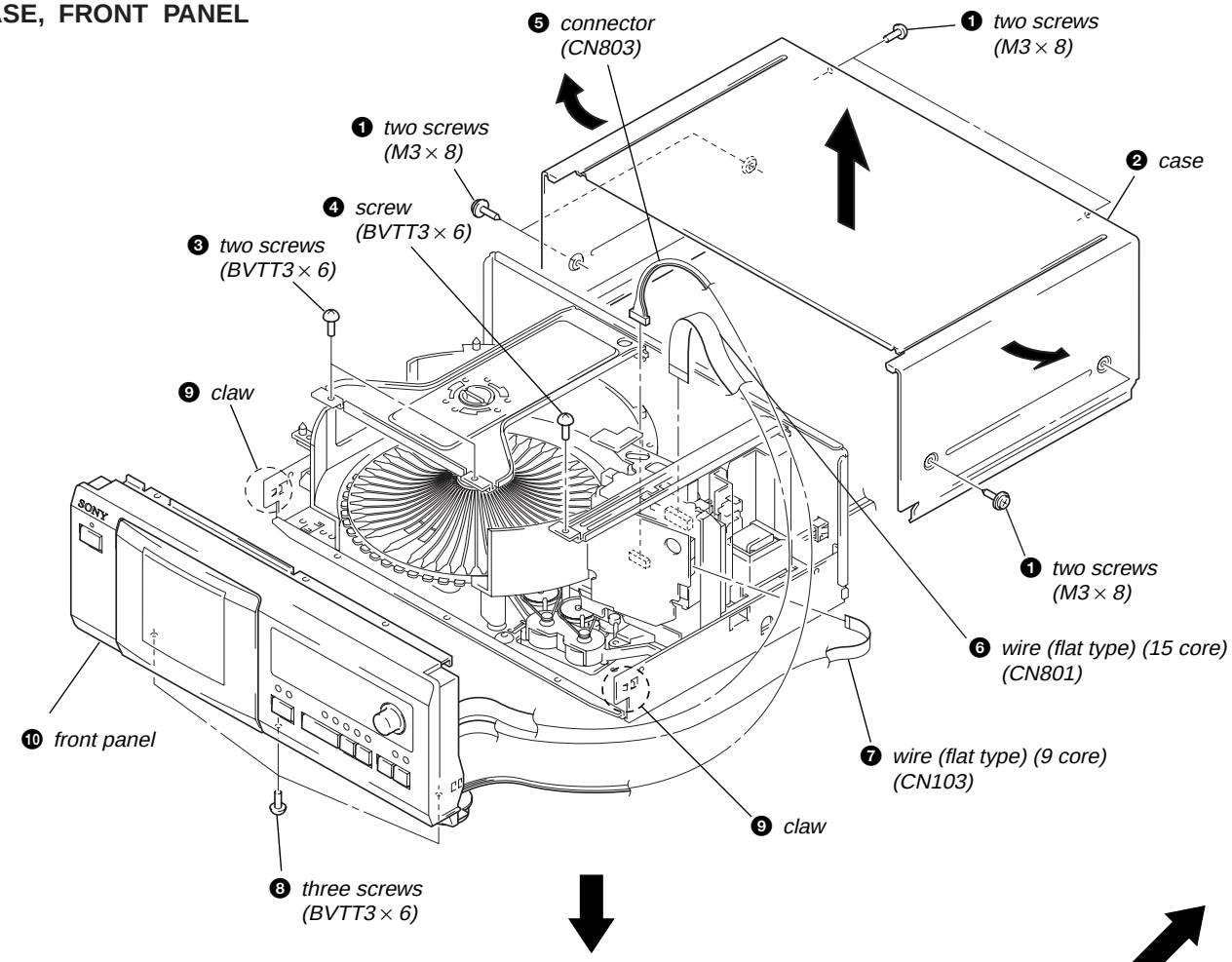
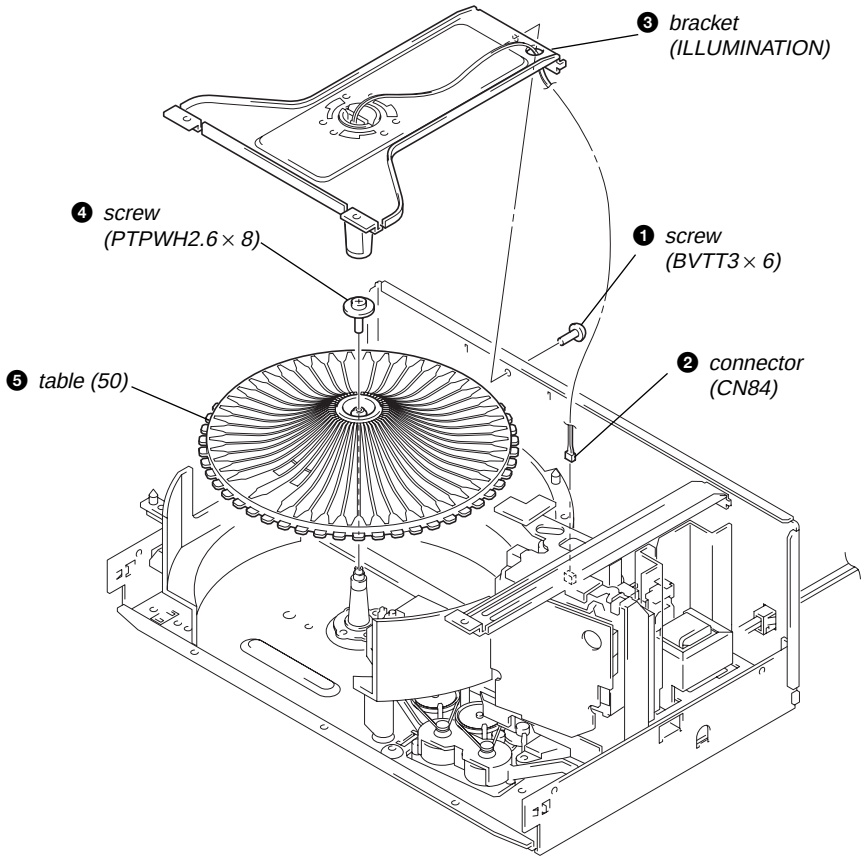
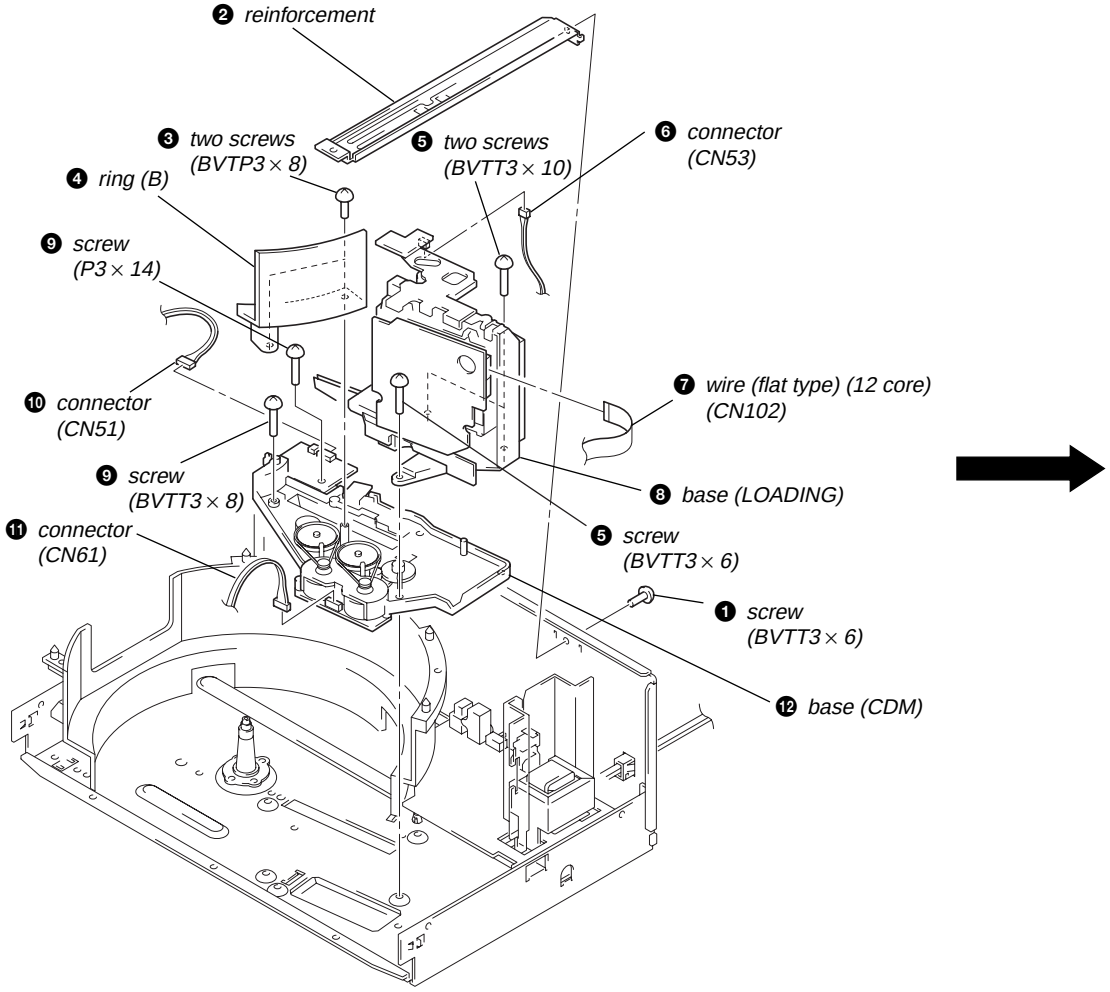

❺ connector (CN803)
❶ two screws (M3 × 8)
❶ two screws (M3 × 8)
❷ case
❹ screw (BVTT3 × 6)
❸ two screws (BVTT3 × 6)
❾ claw
❶ two screws (M3 × 8)
❻ wire (flat type) (15 core) (CN801)
❿ front panel
❼ wire (flat type) (9 core) (CN103)
❾ claw
❽ three screws (BVTT3 × 6)

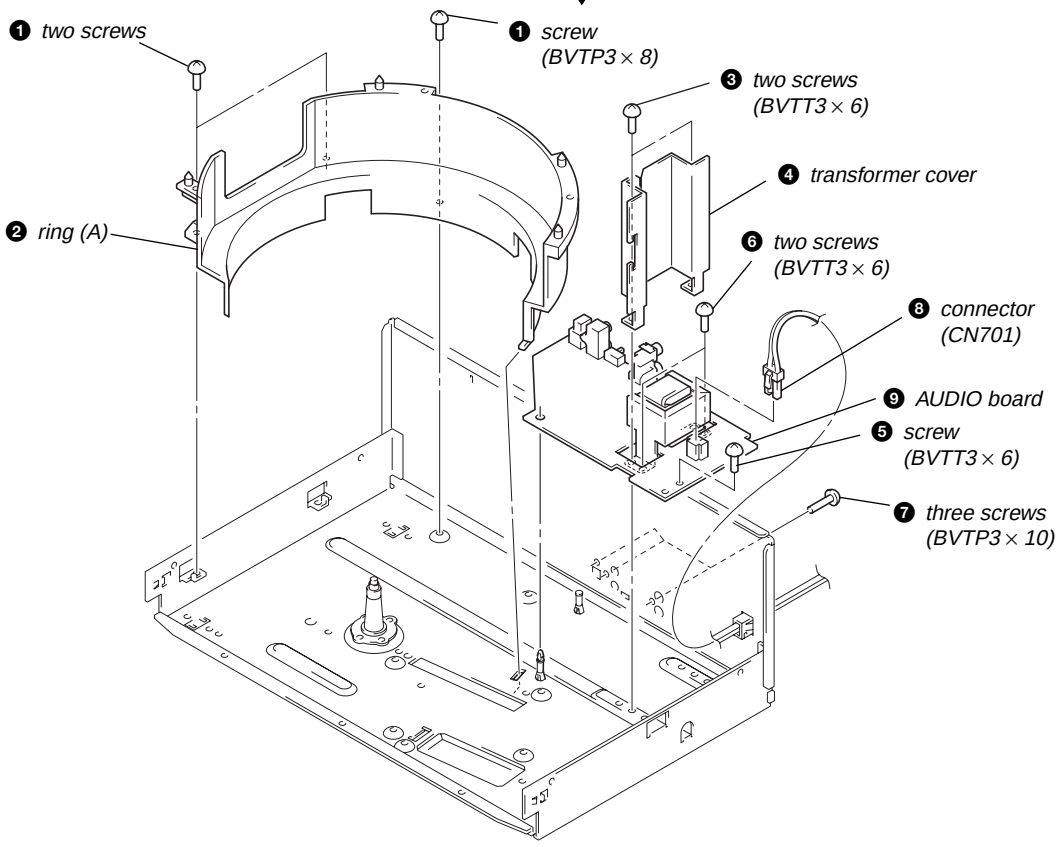
TABLE (50)



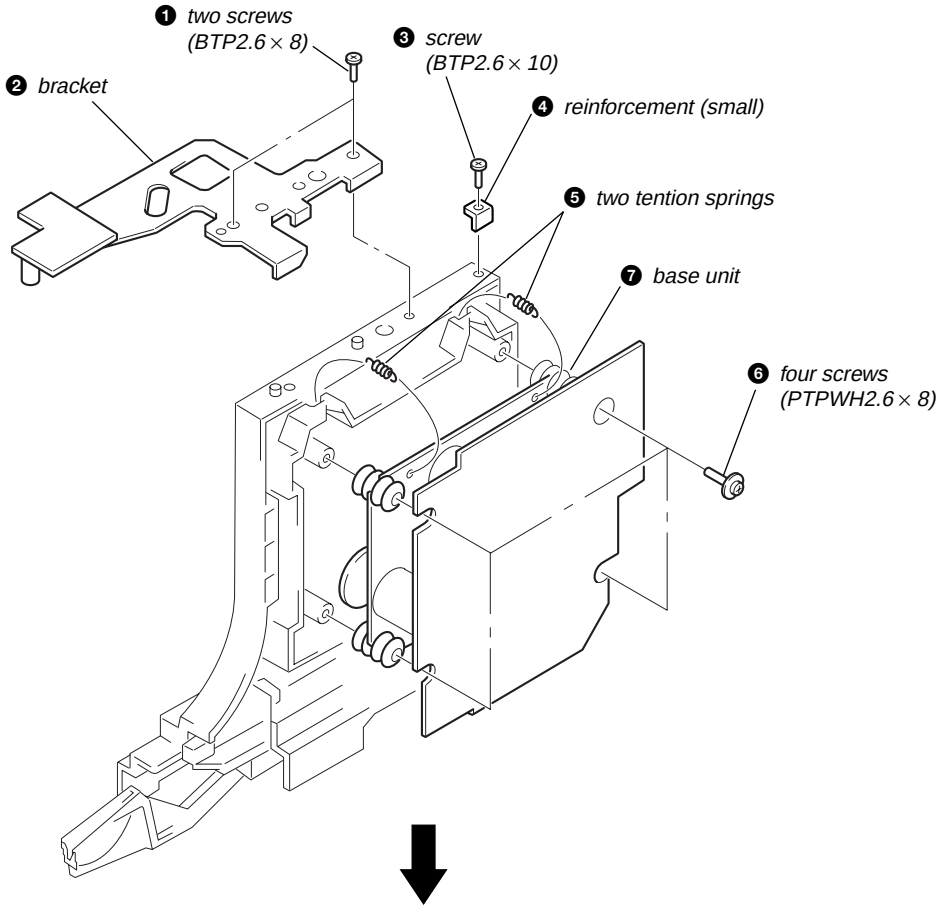
CD MECHANISM DECK SECTION


❷ reinforcement
❸ two screws (BVTP3 × 8)
❺ two screws (BVTT3 × 10)
❻ connector (CN53)
❹ ring (B)
❾ screw (P3 × 14)
❿ connector (CN51)
❼ wire (flat type) (12 core) (CN102)
❾ screw (BVTT3 × 8)
❽ base (LOADING)
⓫ connector (CN61)
❺ screw (BVTT3 × 6)
❶ screw (BVTT3 × 6)
⓬ base (CDM)

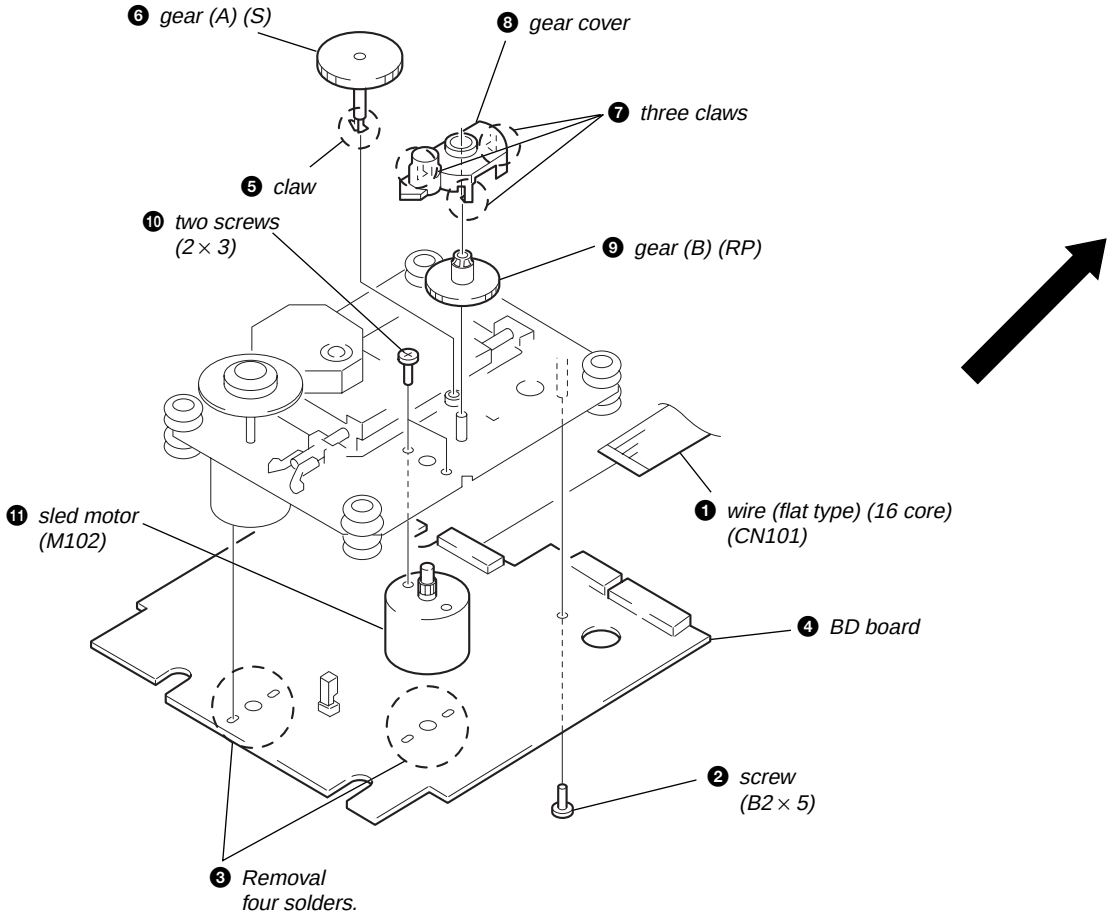
AUDIO BOARD


❶ two screws
❶ screw (BVTP3 × 8)
❸ two screws (BVTT3 × 6)
❹ transformer cover
❷ ring (A)
❻ two screws (BVTT3 × 6)
❽ connector (CN701)
❾ AUDIO board
❺ screw (BVTT3 × 6)
❼ three screws (BVTP3 × 10)

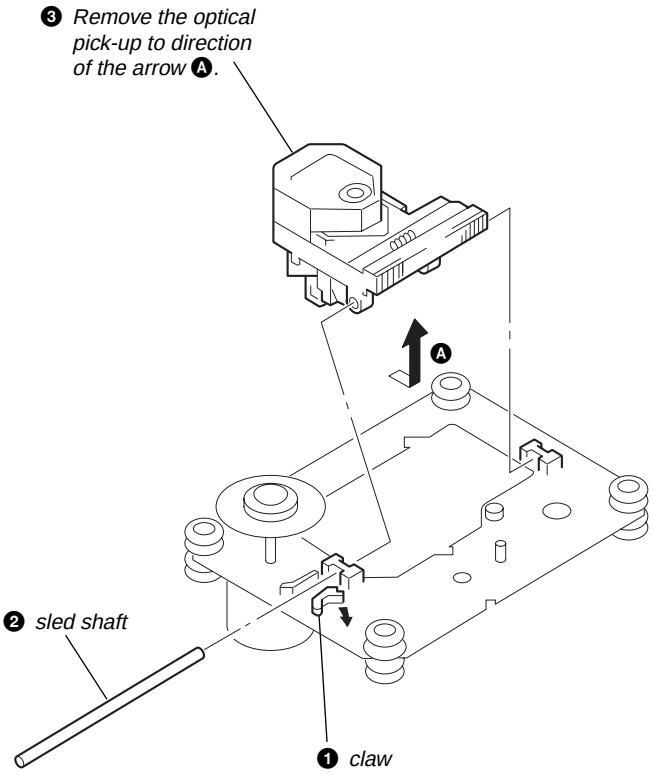
BASE UNIT



BD BOARD, SLED MOTOR (M102)



OPTICAL PICK-UP (KSS-213B/S-N)



SECTION 4
TEST MODE

DISPLAY CHECK MODE

Note:
This will not work properly if the DISC is set to any slit.

1. Press the I/⏻ button, turn ON the power, and set a CD in any slit.
2. Press the I/⏻ button, and turn OFF the power.
3. While pressing the CHECK and PLUS ONE buttons together with the power OFF, press the I/⏻ button and turn ON the power.
4. All the segments of the fluorescent indicator tube light up, and the ▷ , ▮▮ , and PLUS ONE LEDs light up.
5. To exit the display check mode, press the I/⏻ button.

ADJ MODE

1. Press the I/⏻ button to turn the power ON.
2. Open the front cover, and press the PLUS ONE button.
3. Set the disc (YEDS-18 : 3-702-101-01) in the PLUS ONE slit.
4. Close the front cover, and chuck the disc.
5. Press the I/⏻ button, and turn OFF the power.
6. Connect TP (ADJ) of the DISPLAY board and the ground with a lead wire.
7. Press the I/⏻ button and turn ON the power.

The ADJ mode is set with the above.

Differences with normal mode
- No high speed search is performed during access
- Ignored even if GFS becomes L
- Ignored even if Q data cannot be read
- Spindle servo gain is set to 12 cm mode (Even with 8 cm disc)

The following special functions will work when certain functions are pressed in this mode.

Special functions in ADJ mode

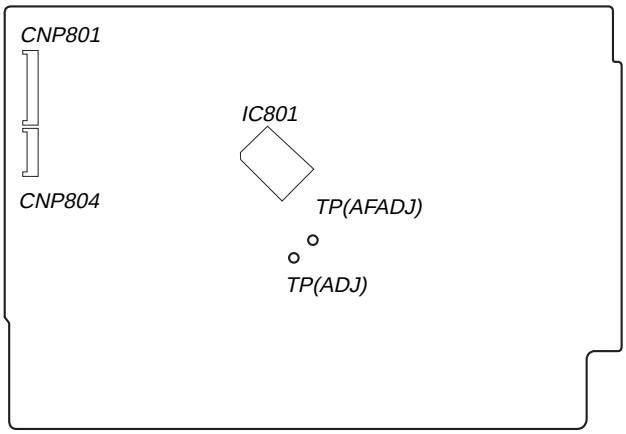
(The ( ) buttons function only with the general purpose remote.)

Button	Function
(3)	Tracking servo, sled servo OFF
(8)	Tracking servo, sled servo ON
CHECK	S shape observation mode

FLUORESCENT INDICATOR TUBE, LED ALL LIT, AND KEY CHECK MODE

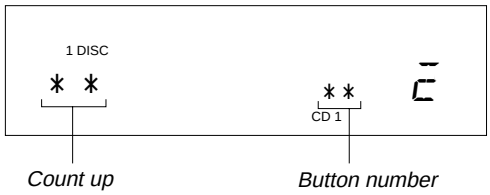
Connect TP (AFADJ) and ground of the DISPLAY board with a lead wire.
When a button is pressed, the left side of the indicator tube will show how many buttons have been pressed so far.
(However, buttons already pressed once will not be counted.)
The right side will show the numbers corresponding to the pressed buttons.

[DISPLAY BOARD] — CONDUCTOR SIDE —

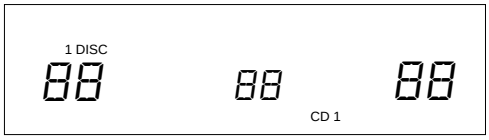


Buttons and Corresponding Button Numbers

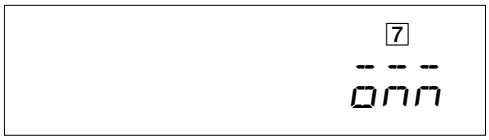
Button	Button Number or Display
CLEAR	0
CHECK	1
DISC PUSH ENTER	2
±	8
≠	9
REPEAT	14
PLAY MODE	15
BLOCK 5	16
BLOCK 4	17
BLOCK 3	18
BLOCK 2	19
BLOCK 1	20
I/⏻	21
PLUS ONE	While the button is pressed, LED (D803) lights up.
▷	While the button is pressed, LED (D801) lights, and the whole fluorescent indicator tube lights up.
▮▮	The fluorescent indicator tube (segment check) is partially lit and LED near by (D802) is lit while pressed.
■	The fluorescent indicator tube is partially lit while pressed (grid check).



1. Grid check



2. Segment check



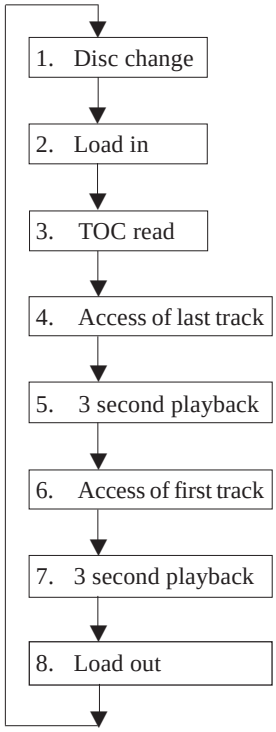
Key Inputs Other than Buttons and How to Display

Key input	Display
Rotate the JOG knob to the right	Fluorescent indicator tube block indicator lights up in the order of 1 → 2 → 3 → 4 → 5 → 1 → ·····.
Rotate the JOG knob to the left	Fluorescent indicator tube block indicator lights up in the order of 5 → 4 → 3 → 2 → 1→ 5 → ·····.
Press the JOG knob (ENTER)	Displays button number 2
Door cover "Close"	STANDBY LED goes OFF
Door cover "Open"	STANDBY LED lights up

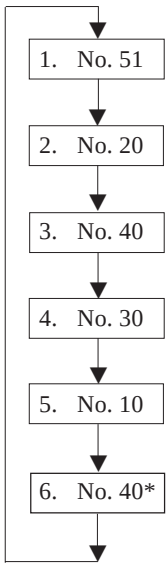
AGING MODE

- Mode which repeatedly changes and plays back discs automatically in the unit.
- It will repeat aging as long as no errors occur.
- If an error occurs during aging, it will stop all servos, motors, etc. instantaneously, display the error number, and stop operations. However, the stopping conditions differ according to whether the unit is equipped with the "self-protection function during errors" described later.
  The function serves to maintain the state of the unit when errors occur.

Sequence of Aging Mode



Order of Disc Change
(1 cycle takes 3 minutes)



* DISC No. 40 chucks twice during one cycle.
To differentiate, the "2" on the block indicator of the fluorescent indicator tube will light up during the second chucking.

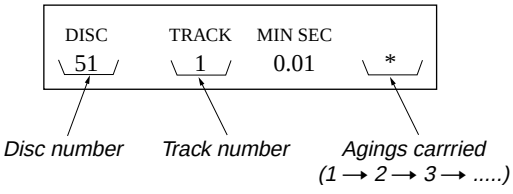
Special Functions in Aging Mode

There are some useful function in the aging mode.
- Disc setting mode*1
- Switching of use/disuse of protection function in errors *2
- Aging cycle count function *3

*1 Disc setting mode:
5 discs are set before setting the aging mode. This mode makes the setting of these discs more easy.

*2 Switching of use/disuse of protection function in errors:
Function which voluntarily corrects errors which occur during normal operations by retries.
If this function is not provided, all operations will be stopped without retiring. It is suitable for checking errors with low reproducibility.
If this function is provided, and errors can be corrected by retries, aging will be continued without stopping.
(The normal aging should be performed with "be".)

*3 Aging cycle count function:
Functions which displays the number of agings carried out on the Fluorescent indicator tube in numbers. One aging cycle consists of six discs.



Aging procedure:

Some operating method will be changed depending on if the following jig for the aging mode exists or not.

- Jig

Parts. No	Description
J-2501-123-A	Remote commander (For aging mode)

With remote commander for aging mode:

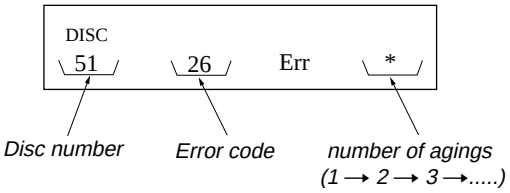
1. Turn ON the power of the unit. Open the front cover.
2. Press the [AGING START] button of the remote commander for aging mode.
3. When the disc set mode is set, the [▷] and [▮▮] LEDs blink.
4. Rotate the JOG dial. The slits (No. 10, 20, 30, 40, 51) for setting the discs will come forward. Insert the discs into these slits. Do not set the discs in other slits.
5. Set the use/disuse of the self protection function in errors. Press the [REPEAT] button. When REPEAT is displayed on the fluorescent indicator tube, the self protection function during the error will become "Use".
   If the REPEAT display is OFF, it means that the function is not used. (Normally set to "Use" when performing aging.)
6. Press the [▷] button.
7. The [▷] LED blinks, the aging mode is set, and aging is started.
8. The aging cycle lasts 3 minutes. When problems occur during aging, the error number will be displayed on the fluorescent indicator tube, and the [▮▮] LED will light up.
   (Refer to the following table for the details of the errors.)
9. Aging will be repeated as long as no errors occur.
10. After each aging cycle, the number displayed on the Fluorescent indicator tube will increase.
11. To end aging, press the [I/⏻] button

Without remote commander for aging mode:

1. Turn ON the power of the unit. Open the front cover.
2. Press the [PLAY MODE], [▷] , and [≠] buttons in order.
3. When the disc set mode is set, the [▷] and [▮▮] LEDs blink.

The following procedure is the same as in the case "With remote commander for aging mode".

Error Display



Error code

Code number	Name	Contents
Err 01	DISC sensor check 1	No disc in the specified slit
Err 02	DISC sensor check 2	Disc in other slits
Err 03	————————	No function
Err 04	Table operation check 2	No table sensor input
Err 05	Loading operation check 1	Load in timeover
Err 06	Loading operation check 2	Load out timeover
Err *1	BU related check 1	Access timeover
Err *2	BU related check 2	High speed search NG
Err *3	BU related check 3	Q data read error
Err *4	BU related check 4	BU operation (From focus search to until signal can be read) timeover
Err *5	BU related check 5	GFS monitor error
Err *6	BU related check 6	Focus cannot be imposed by focus search

The * numbers mean the following according to the state of the unit during aging

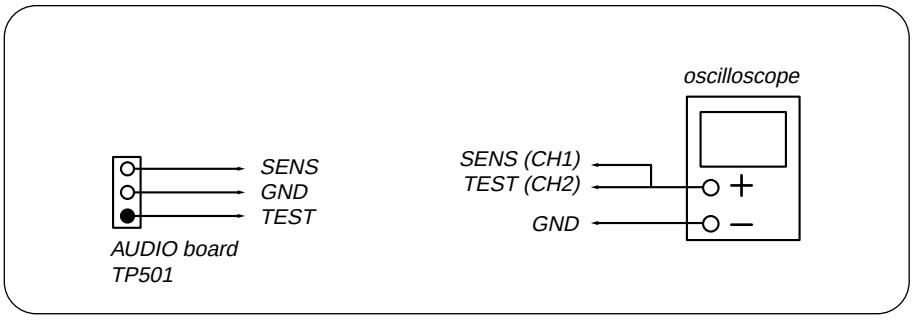
2 : From checking to end of TOC read
3 : From end of TOC read to end of last track playback
4 : From end of last track playback to end of first track playback

SECTION 5
MECHANICAL ADJUSTMENTS

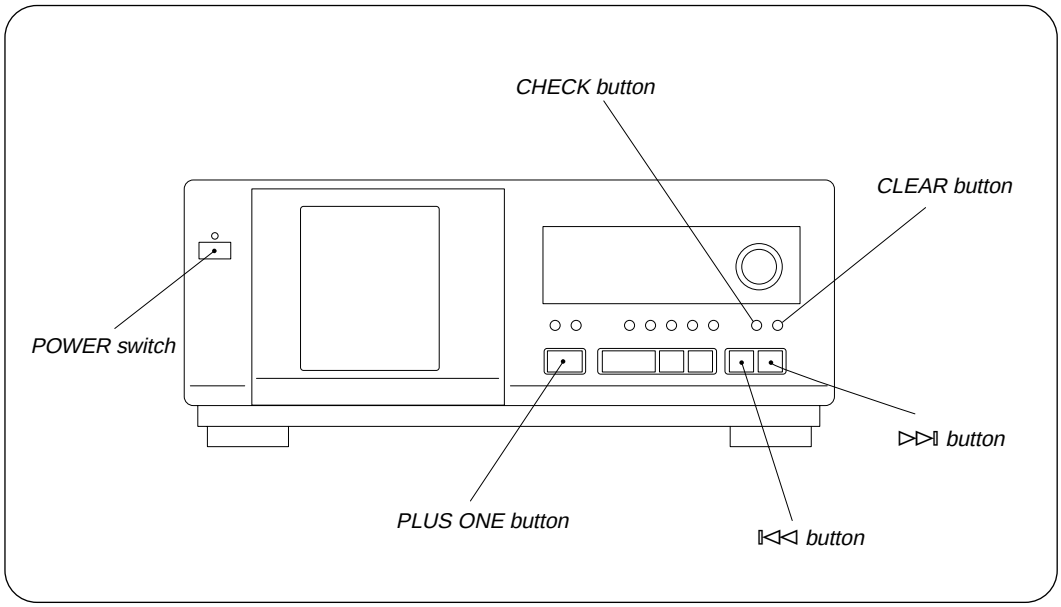
To adjust the mechanism section, enter the mechanism section adjustment mode.
For how to enter the mechanism section adjustment mode, refer to each adjustment section.

DISC SENSOR ALIGMENT

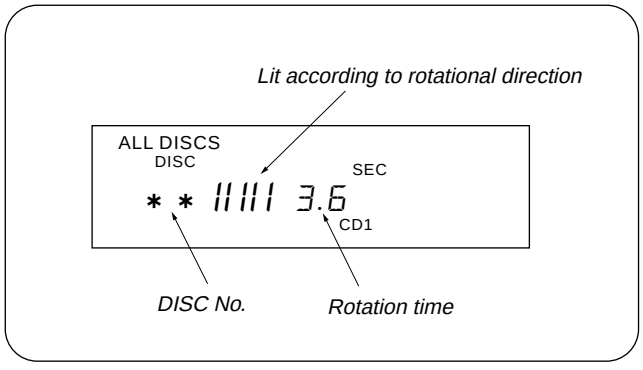
1. Make sure that there is no disc in the unit.
2. Connect an oscilloscope to TP501 of the AUDIO board.

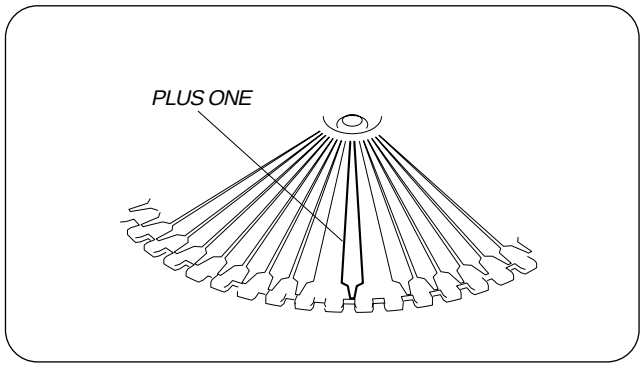


3. While pressing the [CLEAR] and [PLUS ONE] buttons at the same time and turn ON the power.



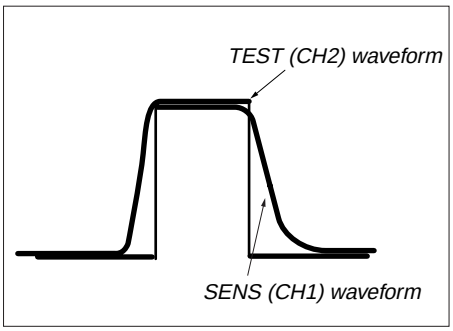
4. The fluorescent indicator tube shows as follows, and the mechanism section adjustment mode is set.

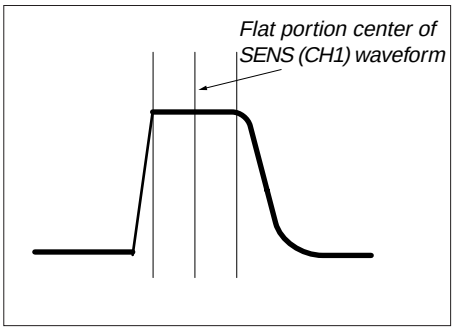


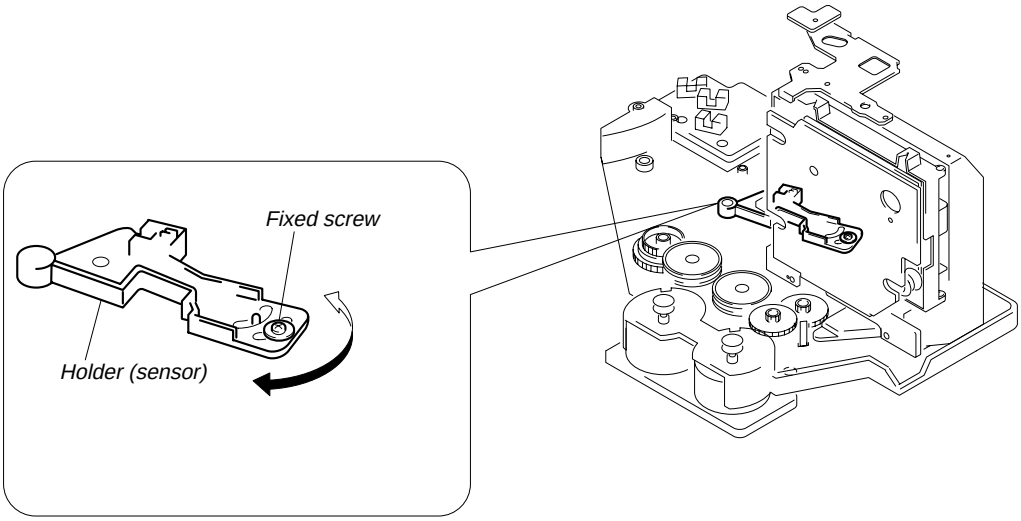


5. The disc table rotates in the clockwise direction. The disc table rotation time is displayed with “PLUS ONE” slit as a measuring point.
6. Measure the waveform of the oscilloscope when the disc table is rotating.

7. Move the holder (sensor) center so that the flat portion center at the top of the SENS (CH1) input waveform and the ‘’H” center of TEST (CH2) coincide.





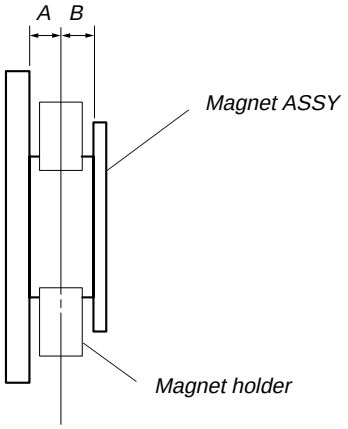


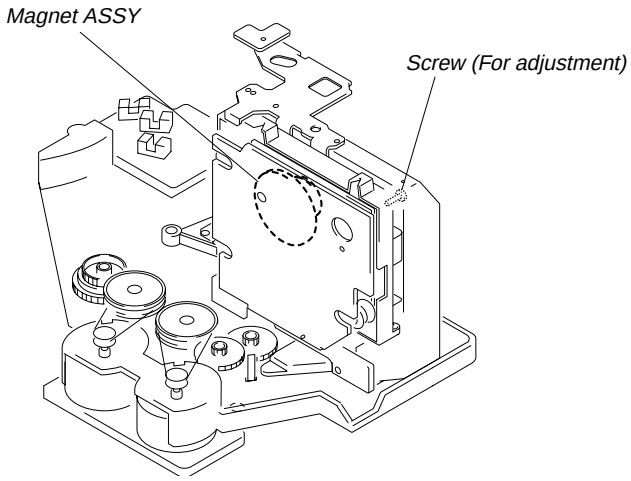
8. Tighten the fixed screw to fix the disc table, then press the [CLEAR] button.
9. The disc table rotates in the counterclockwise direction. Measure the waveform and make sure that the flat portion center at the top of the SENS (CH1) input waveform and the ‘’H” center of TEST (CH2) coincide.
10. If the adjustment is not successful, press the [CLEAR] button to rotate the disc table in the clockwise direction, and perform steps 6 to 9.

Note: During the adjustment mode, the rotational direction is switched each time the [CLEAR] button is pressed.
Pressing the [CHECK] button enters the loading mode which will be described later. Pressing the [CLEAR] button rotates the disc table again.

MAGNET ASSY ALIGMENT

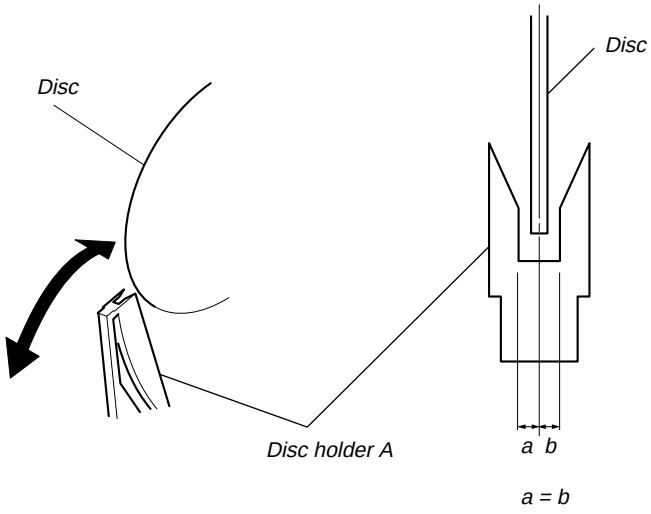
1. Check that there is no disc in the unit and then turn ON the power. Open the door, and set a disc in the PLUS ONE slit.
2. Turn OFF the power, close the door, and while pressing the [CLEAR] and [PLUS ONE] buttons simultaneously, turn ON the power again.
3. Press the [CHECK] button, and set the loading mode.
4. Press the [±] button and chuck the disc.
5. Adjust the magnet assembly and magnet holder so that A=B as shown in the figure.

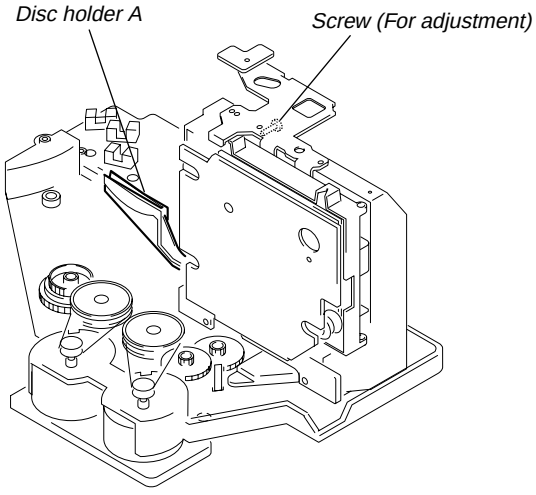




DISC HOLDER A ALIGMENT

1. Check that there is no disc in the unit and then turn ON the power. Open the door, and set a disc in the PLUS ONE slit.
2. Turn OFF the power, close the door, and while pressing the [CLEAR] and [PLUS ONE] buttons simultaneously, turn ON the power again.
3. Press the [CHECK] button, and set the loading mode.
4. Press the [±] button and chuck the disc.
5. Press [≠] or [±] button to stop the disc holder A slightly away from the disc.
6. Rotate and adjust the adjusting screw so that the center of the disc and that of the disc holder coincide.

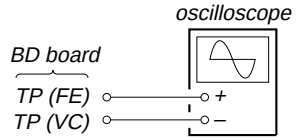




SECTION 6
ELECTRICAL ADJUSTMENTS

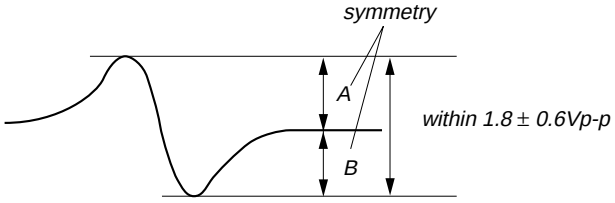
Note :
1. CD Block is basically designed to operate without adjustment. Therefore, check each item in order given.
2. Use YEDS-18 disc (3-702-101-01) unless otherwise indicated.
3. Use an oscilloscope with more than 10MΩ impedance.
4. Clean the object lens by an applicator with neutral detergent when the signal level is low than specified value with the following checks.

S Curve Check



Procedure :
1. Press the I/⏻ button and turn ON the power supply.
2. Open the front cover, and press the PLUS ONE button.
3. Set the disc (YEDS-18) into the "PLUS ONE" slit.
4. Close the front cover, and chuck the disc.
5. Press the I/⏻ button and turn OFF the power.
6. Connect the oscilloscope to TP (FE) of the BD board.
7. Connect TP (ADJ) of the DISPLAY board and the ground with a lead wire.
8. Press the I/⏻ button and turn ON the power.
9. The first track will be played back automatically. When the CHECK button is pressed, "S JI" will be displayed on the fluorescent indicator tube, and focus search will be repeated.
10. Check the oscilloscope waveform (S-curve) is symmetrical between A and B. And confirm peak to peak level within 1.8 ± 0.6 Vp-p.

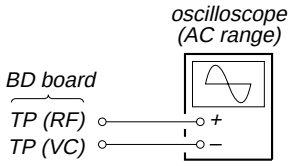
S-curve waveforms



11. Turn OFF the power, and remove the lead wire connected at step 7.

Note: • Try to measure several times to make sure than the ratio of A : B or B : A is more than 10 : 7.
• Take sweep time as long as possible and light up the brightness to obtain best waveform.

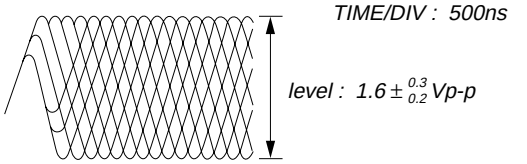
RF Level Check



Procedure :
1. Press the I/⏻ button and turn ON the power supply.
2. Open the front cover, and press the PLUS ONE button.
3. Set the disc (YEDS-18) into the "PLUS ONE" slit.
4. Close the front cover, and chuck the disc.
5. Press the I/⏻ button and turn OFF the power.
6. Connect the oscilloscope to TP (RF) of the BD board.
7. Connect TP (ADJ) of the DISPLAY board and the ground with a lead wire.
8. Press the I/⏻ button and turn ON the power.
9. Playback the fifth track of the disc.
10. Confirm that oscilloscope waveform is clear and check RF signal level is correct or not.
11. Turn OFF the power, and remove the lead wire connected at step 7.

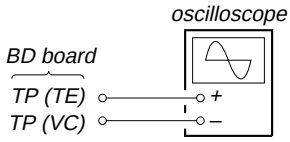
Note: A clear RF signal waveform means that the shape "◊" can be clearly distinguished at the center of the waveform.

RF signal waveform



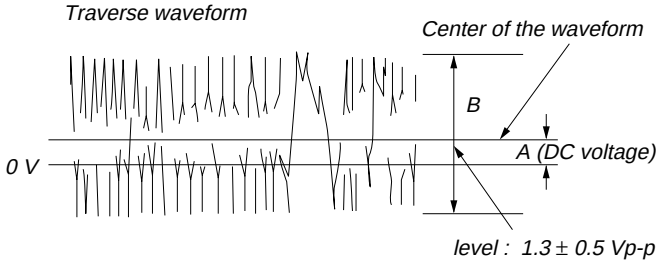
E-F Balance (Traverse) Check

The procedure for this checking method differs for when a general remote control unit is used and not used.



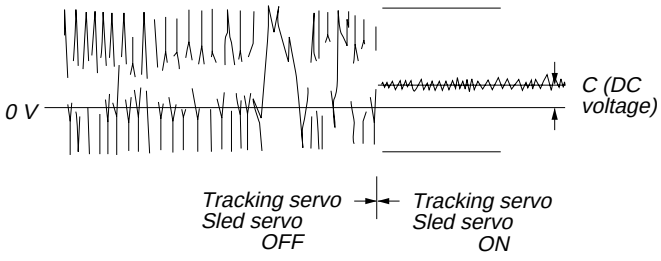
When a general remote commander is used:
1. Press the I/⏻ button and turn ON the power supply.
2. Open the front cover, and press the PLUS ONE button.
3. Set the disc (YEDS-18) into the "PLUS ONE" slit.
4. Close the front cover, and chuck the disc.
5. Press the I/⏻ button and turn OFF the power.
6. Connect the oscilloscope to TP (TE) of the BD board.
7. Connect TP (ADJ) of the DISPLAY board and the ground with a lead wire.
8. Press the I/⏻ button and turn ON the power.
9. Playback the fifth track of the disc.
10. Press the 3 button on the remote commander. (The tracking servo and the sledding servo are turned OFF.)
11. Check the level B of the oscilliscope's waveform and the A (DC voltage) of the center of the Traverse waveform.
Confirm the following :
A/B x 100 = less than ± 10%

Traverse waveform

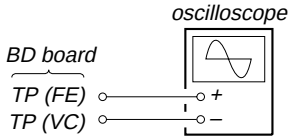


12. Press the 8 button on the remote control unit. (The tracking servo and sledding servo are turned ON.) Confirm the C (DC voltage) is almost equal to the A (DC voltage) is step 11.

Traverse waveform

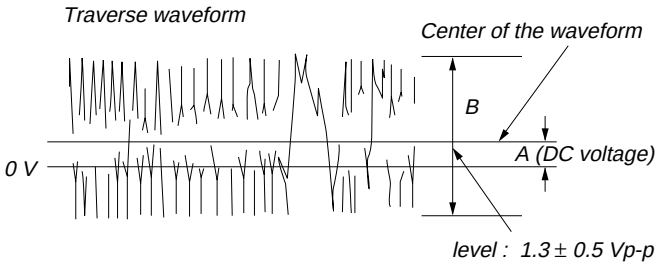


13. Turn OFF the power, and remove the lead wire connected at step 7.

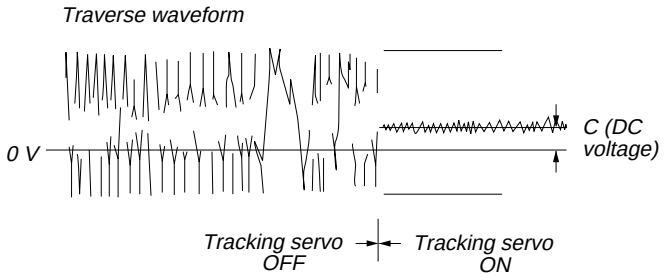


When a general remote commander is not used:

1. Solder lead wires to TP (DVDD) and TP (TOFF) on the BD board severally.
2. Connect the oscilloscope to TP (TE) of the BD board.
3. Press the I/⏻ button and turn ON the power supply.
4. Open the front cover, and press the PLUS ONE button.
5. Set the disc (YEDS-18) into the “PLUS ONE” slit.
6. Close the front cover, and chuck the disc.
7. Playback the fifth track of the disc.
8. Short-circuit the lead wire connected at step 1. (The tracking servo is turned OFF)
9. Check the level B of the oscilliscope's waveform and the A (DC voltage) of the center of the Traverse waveform.
   Confirm the following :
   A/B x 100 = less than ± 10%



10. Disconnect the lead wire short-circuited at step 8. (The tracking servo is turned ON.) Confirm the C (DC voltage) is almost equal to the A (DC voltage) is step 8.

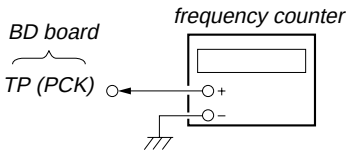


11. Turn OFF the power, and remove the lead wire connected at step 1.

RF PLL Free-run Frequency Check

Procedure :

1. Connect the frequency counter to TP (PCK) of the BD board.



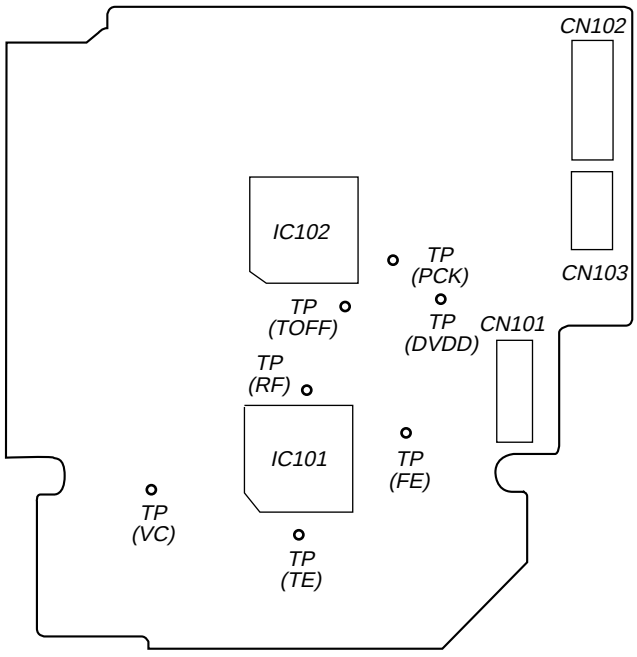
2. Press the I/⏻ button and turn ON the power supply.
3. Open the front cover, and press the PLUS ONE button.
4. Set the disc (YEDS-18) into the “PLUS ONE” slit.
5. Close the front cover, and chuck the disc.
6. Playback the fifth track of the disc.
7. Confirm that reading on frequency counter is 4.3218 MHz ± 30 kHz.

About RV502 on the AUDIO board

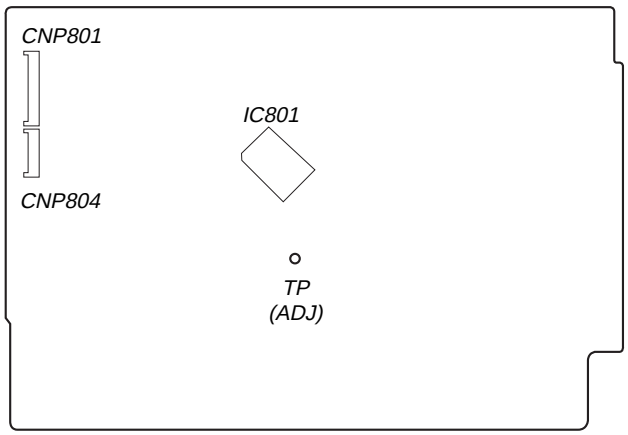
RV502 of the AUDIO board requires no adjustments. Please note that it should be dixed to mechanical center position when you moved and do not know origin position.

Adjustment Location:

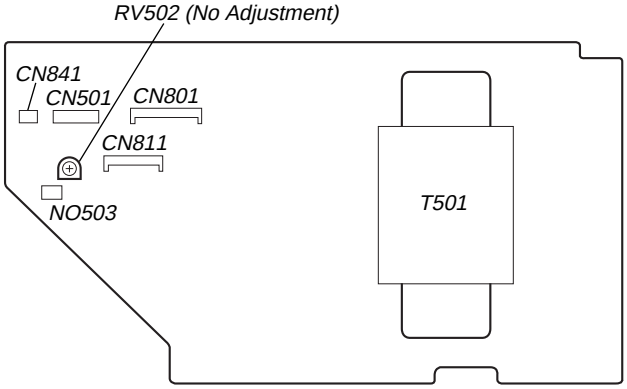
[BD BOARD] — CONDUCTOR SIDE —



[DISPLAY BOARD] — CONDUCTOR SIDE —

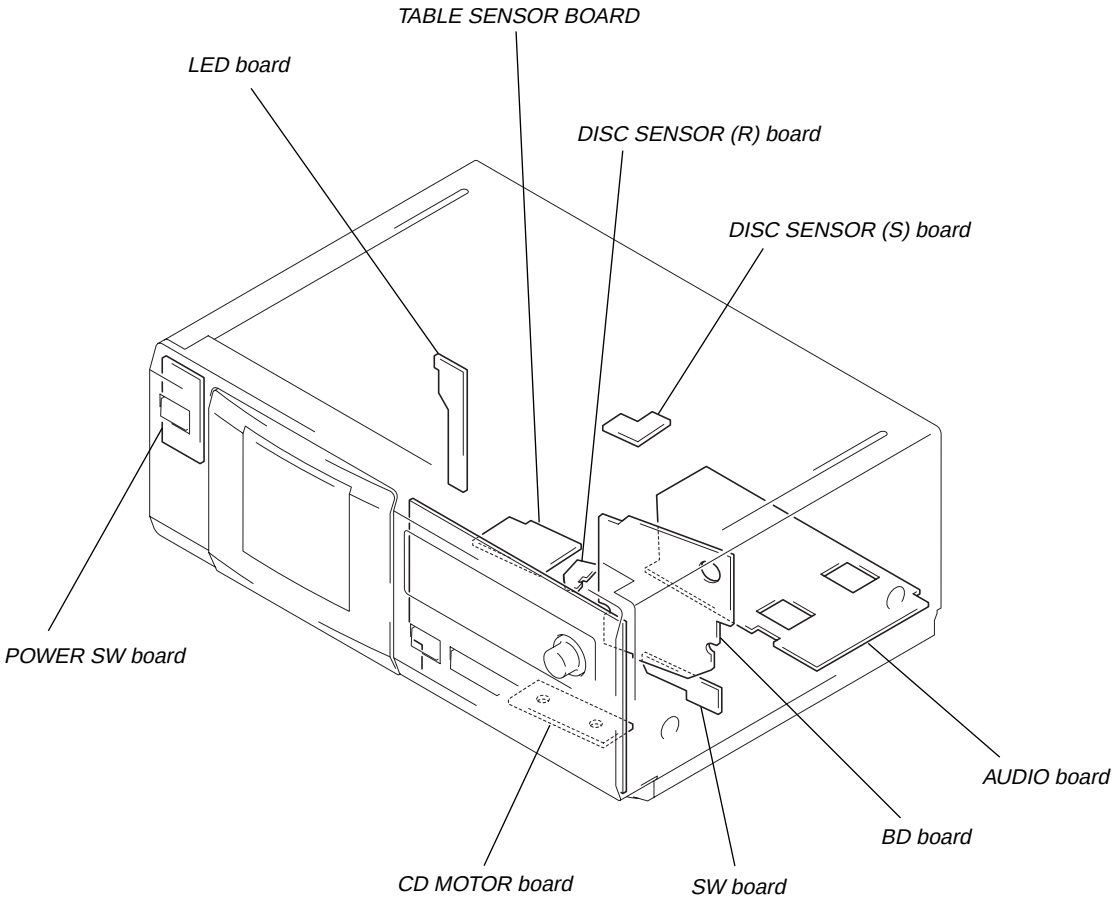


[AUDIO BOARD] — COMPONENT SIDE —



SECTION 7
DIAGRAMS

- **Circuit Boards Location**



THIS NOTE IS COMMON FOR PRINTED WIRING BOARDS AND SCHEMATIC DIAGRAMS.
(In addition to this, the necessary note is printed in each block.)

Note on Schematic Diagram:

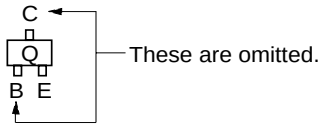
- All capacitors are in µF unless otherwise noted. pF: µµF 50 WV or less are not indicated except for electrolytics and tantalums.
- All resistors are in Ω and 1/4 W or less unless otherwise specified.
- △ : internal component.
- ▭ : panel designation.

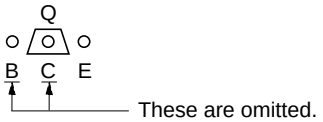
Note:	**Note:**
The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.	Les composants identifiés par une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une piéce portant le numéro spécifié.

- **B +** : B+ Line.
- **B −** : B– Line.
- ▭ : adjustment for repair.
- Voltages and waveforms are dc with respect to ground under no-signal conditions.
  no mark: PLAY
- Voltages are taken with a VOM (Input impedance 10 MΩ). Voltage variations may be noted due to normal production tolerances.
- Waveforms are taken with a oscilloscope.
  Voltage variations may be noted due to normal production tolerances.
- Circled numbers refer to waveforms.
- Signal path.
  ⇨ : CD
  ⇨ : digital out
- Abbreviation
  AED : North European
  AUS : Australian model.
  CND : Canadian model.
  E2 : 120 V AC Area in E model.
  E3 : 240 V AC Area in E model.
  SP : Singapore model.

Note on Printed Wiring Boards:

- ○——— : parts extracted from the component side.
- ——— : parts extracted from the conductor side.
- △ : internal component.
- ▒▒ : Pattern from the side which enables seeing.
- ▨ : Solder bridge.
- Indication of transistor.





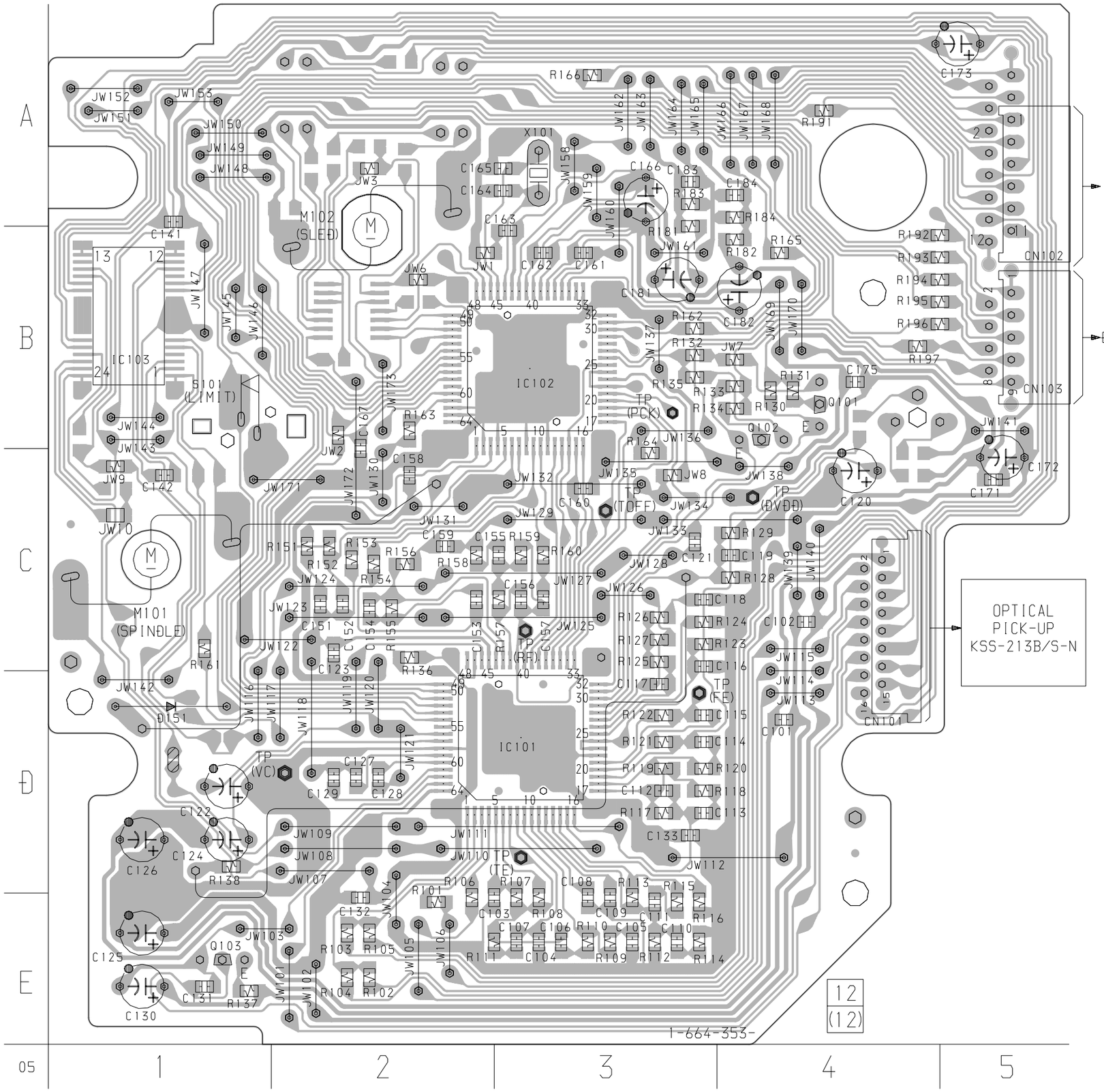
7-1. PRINTED WIRING BOARD – BD Section –

• See page 17 for Circuit Boards Location. • See page 18 for Note.

• **Semiconductor Location**

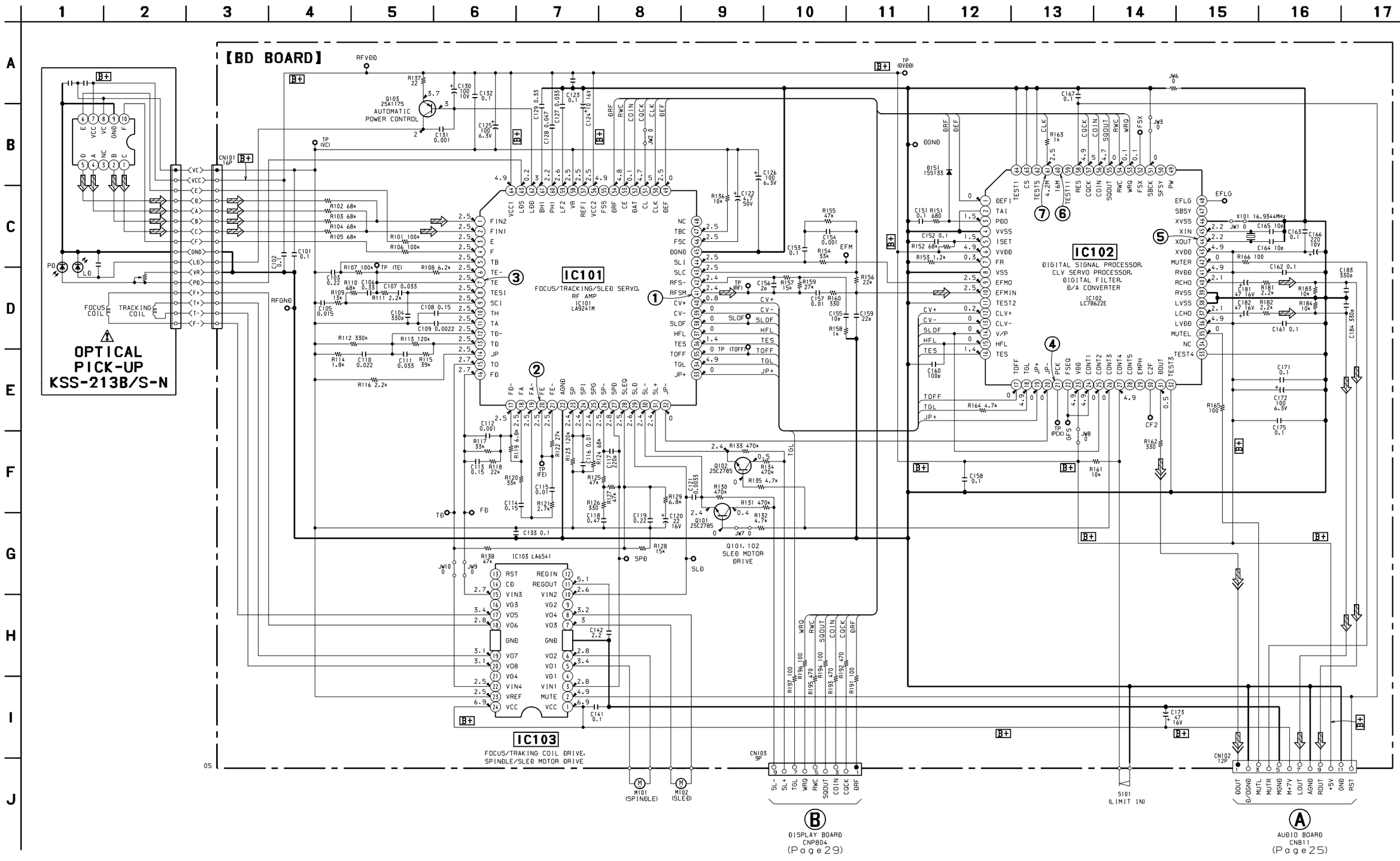
Ref. No.	Location
D151	D-1
IC101	D-3
IC102	B-3
IC103	B-1
Q101	B-4
Q102	B-4
Q103	E-1

【BD BOARD】



7-2. SCHEMATIC DIAGRAM – BD Section –

• See page 34 for Waveforms. • See page 35 for IC Block Diagrams. • See page 37 for IC Pin Function Description. • See page 18 for Note.

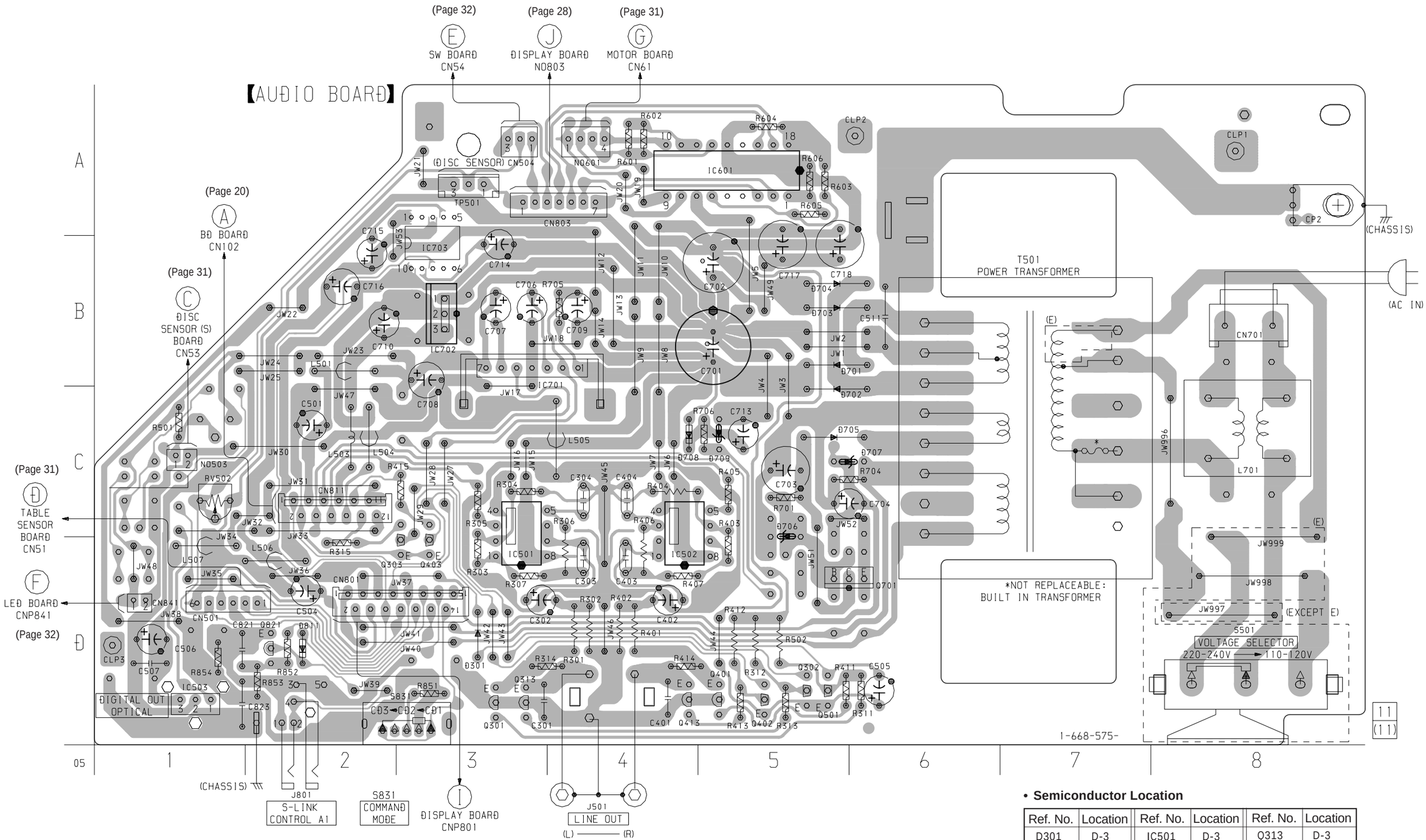


- no mark: PLAY
- Signal path.
  ⇨ : CD
  ⇛ : digital out

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.	Les composants identifiés par une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une piéce portant le numéro spécifié.

7-3. PRINTED WIRING BOARD – AUDIO Section –

• See page 17 for Circuit Boards Location. • See page 18 for Note.

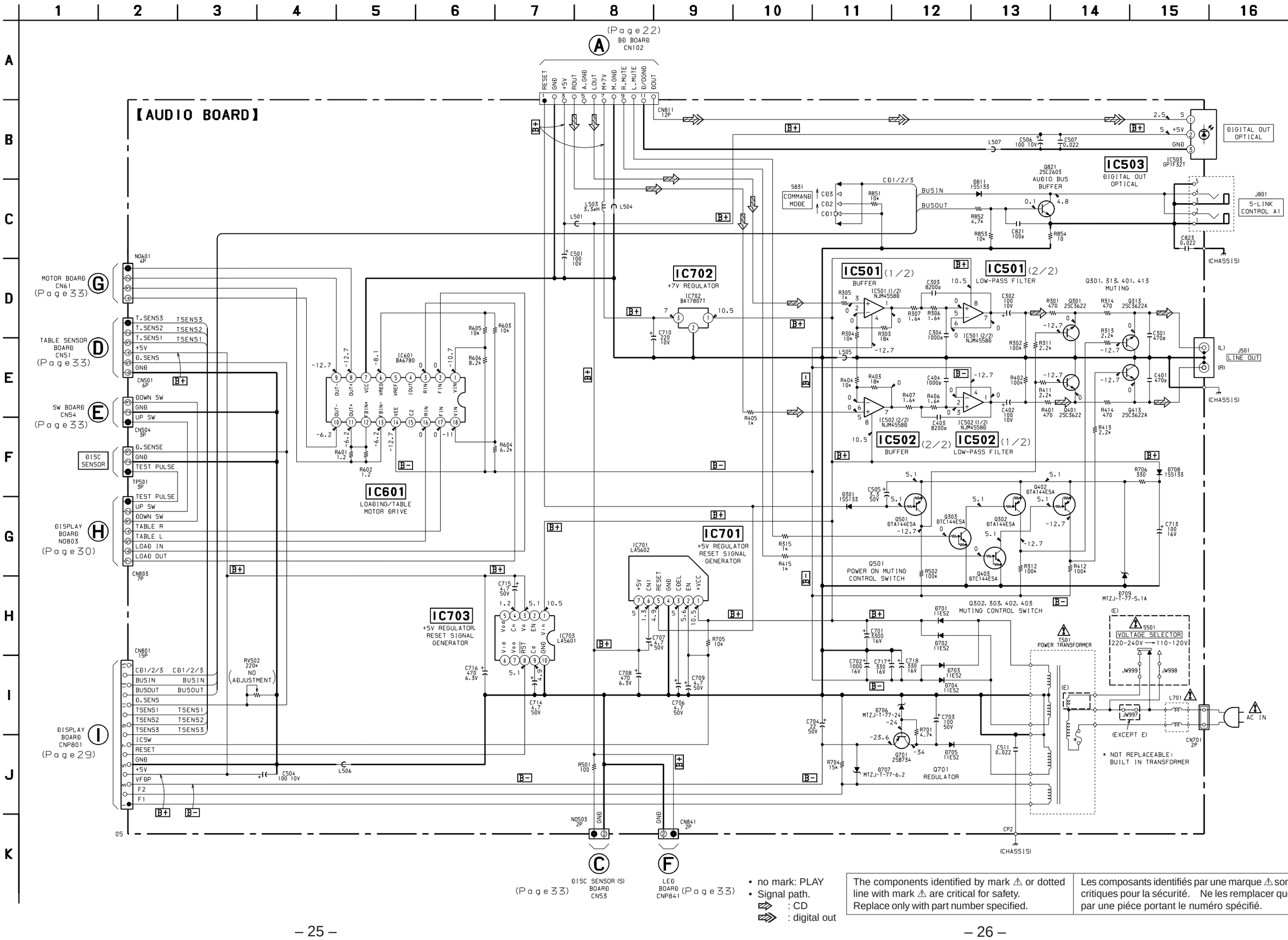


• **Semiconductor Location**

Ref. No.	Location	Ref. No.	Location	Ref. No.	Location
D301	D-3	IC501	D-3	Q313	D-3
D701	B-5	IC502	D-4	Q401	D-5
D702	B-5	IC503	D-1	Q402	D-5
D703	B-5	IC601	A-5	Q403	D-3
D704	B-5	IC701	B-4	Q413	D-4
D705	C-5	IC702	B-3	Q501	D-5
D706	C-5	IC703	B-3	Q701	D-6
D707	C-6			Q821	D-2
D708	C-4	Q301	D-3		
D709	C-5	Q302	D-5		
D811	D-2	Q303	D-3		

7-4. SCHEMATIC DIAGRAM – AUDIO Section –

• See page 36 for IC Block Diagrams. • See page 18 for Note.



- no mark: PLAY
- Signal path.
  ⇨ : CD
  ⇨ : digital out

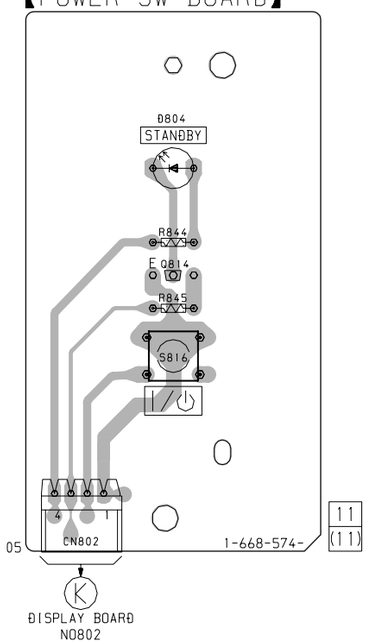
The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.	Les composants identifiés par une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une piéce portant le numéro spécifié.

7-5. PRINTED WIRING BOARDS – PANEL Section –

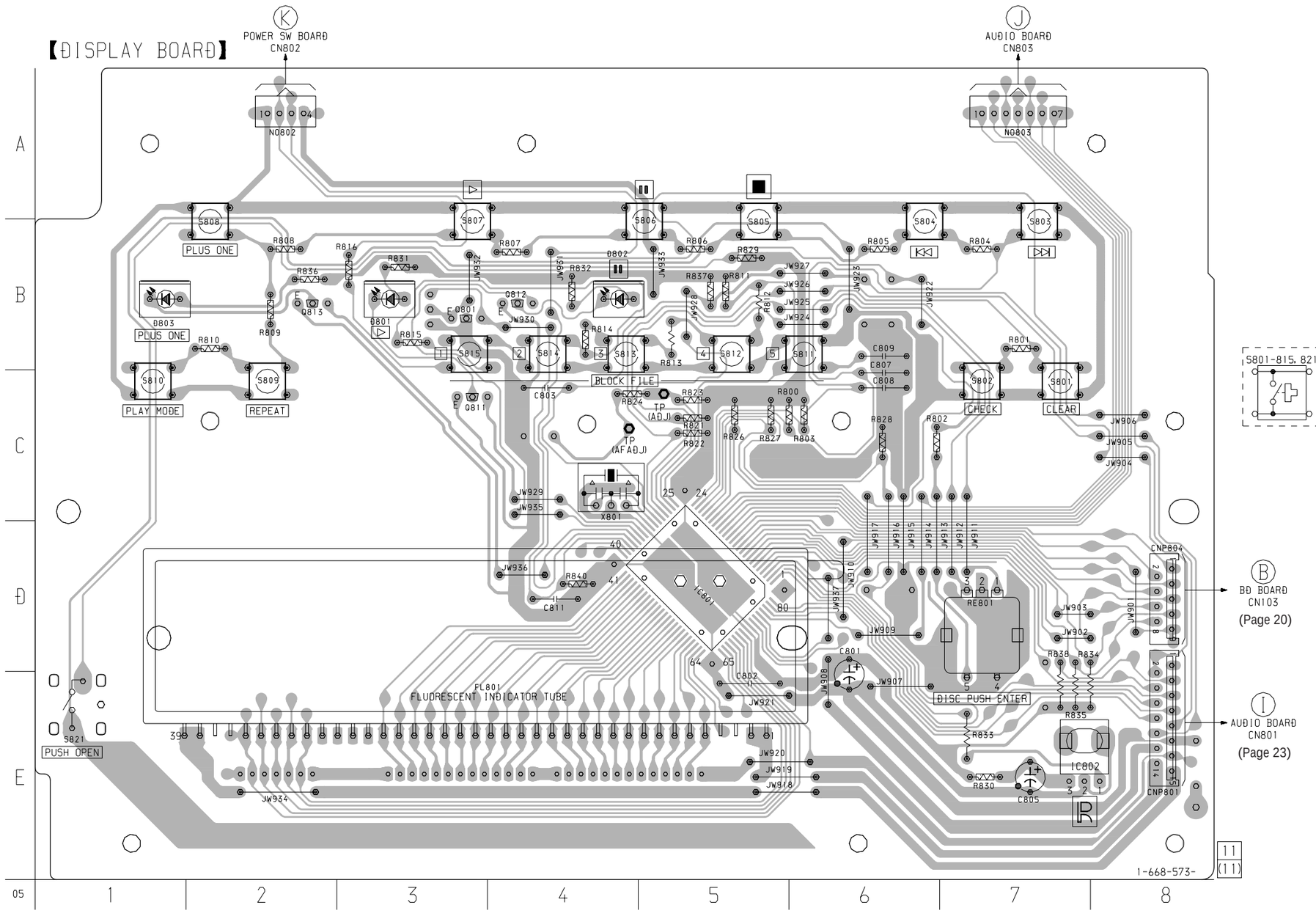
• See page 17 for Circuit Boards Location. • See page 18 for Note.

(Page 23)

【POWER SW BOARD】



【DISPLAY BOARD】

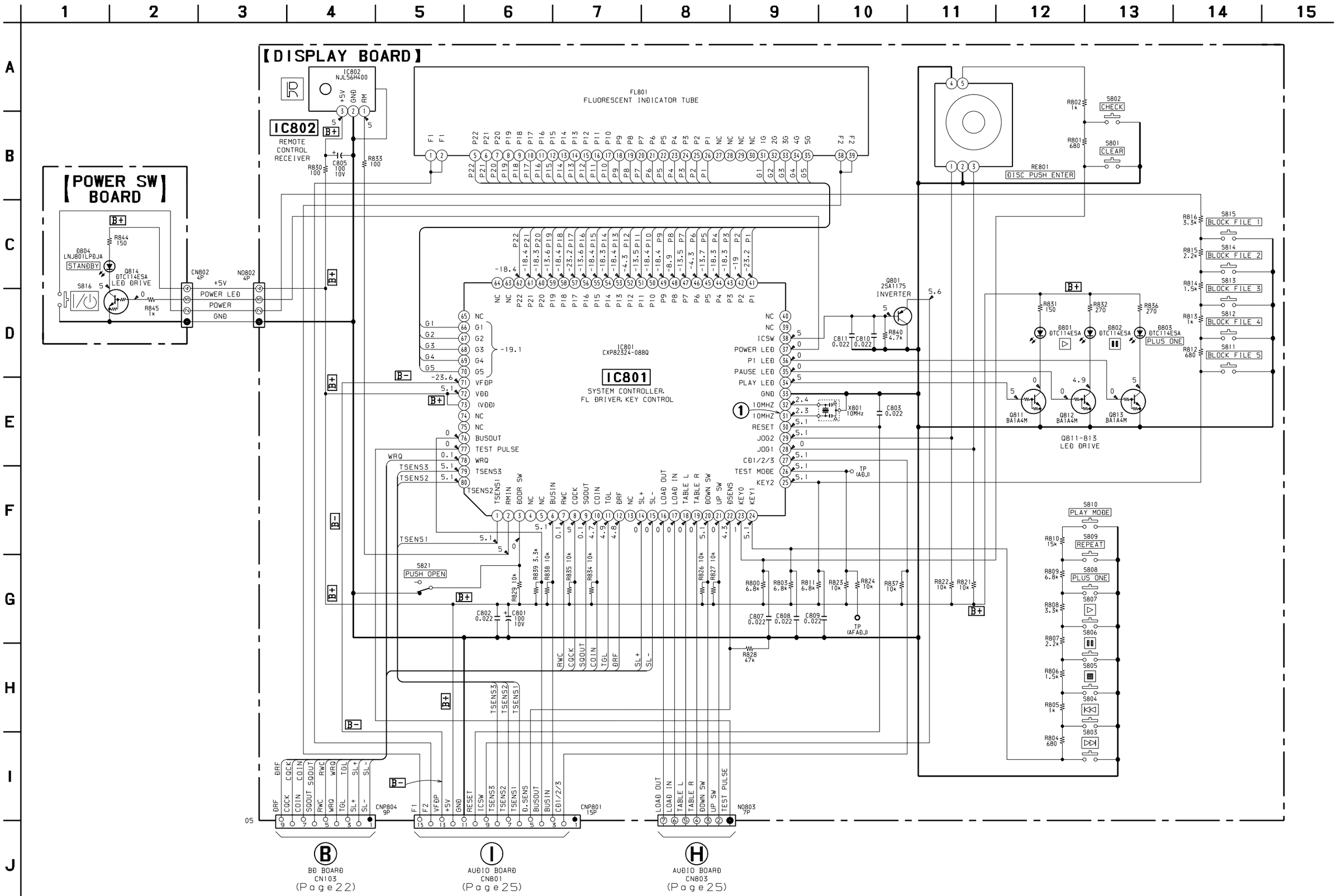


• **Semiconductor Location**

Ref. No.	Location
D801	B-3
D802	B-4
D803	B-1
IC801	D-5
IC802	E-7
Q801	B-3
Q811	C-3
Q812	B-4
Q813	B-2

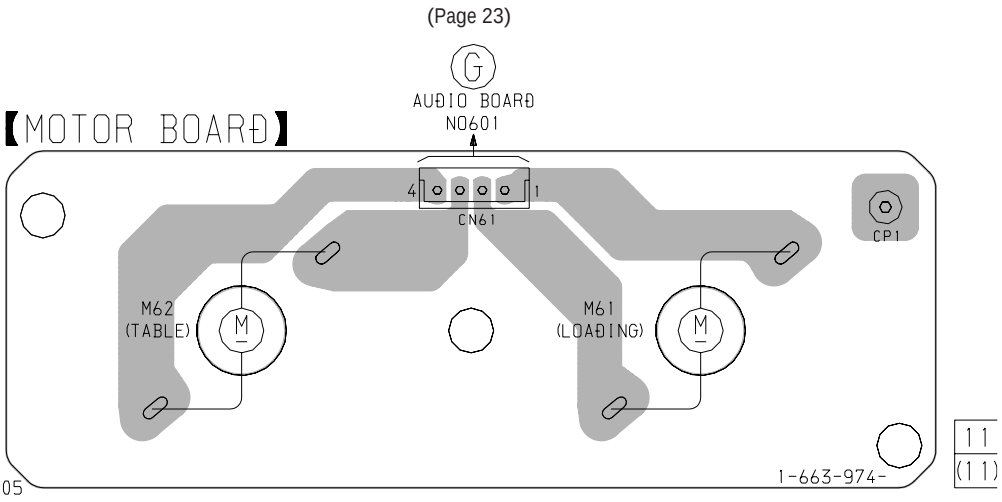
7-6. SCHEMATIC DIAGRAM – PANEL Section –

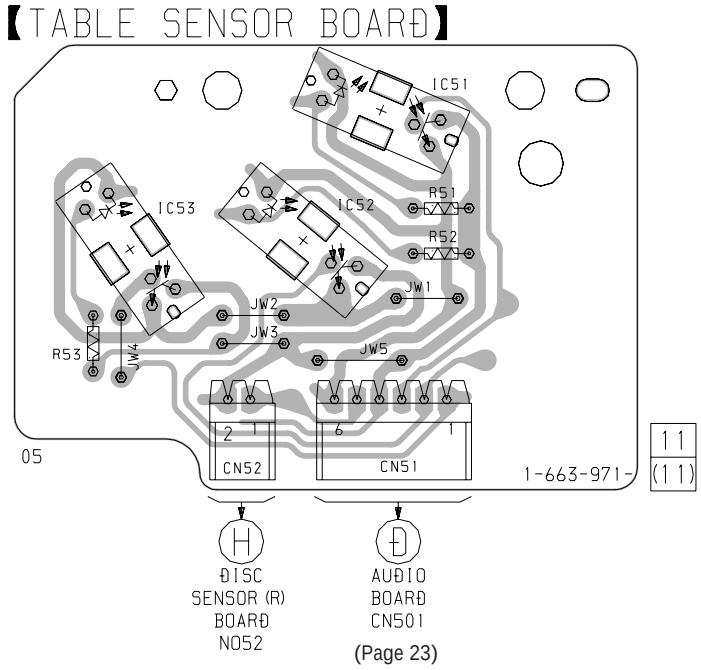
• See page 34 for Waveforms. • See page 41 for IC Pin Function Description. • See page 18 for Note.

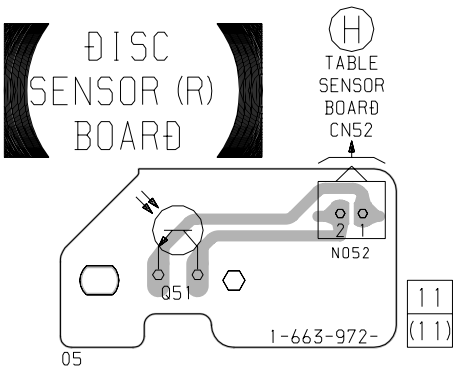


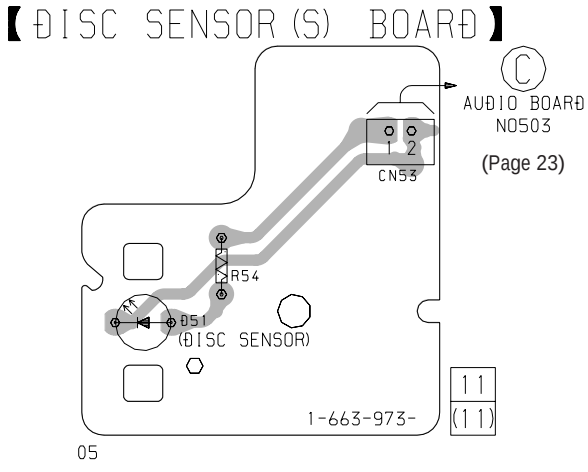
7-7. PRINTED WIRING BOARDS – SENSOR/MOTOR Section –

• See page 17 for Circuit Boards Location. • See page 18 for Note.

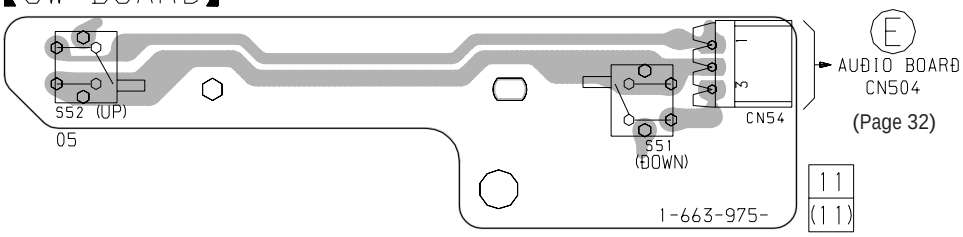




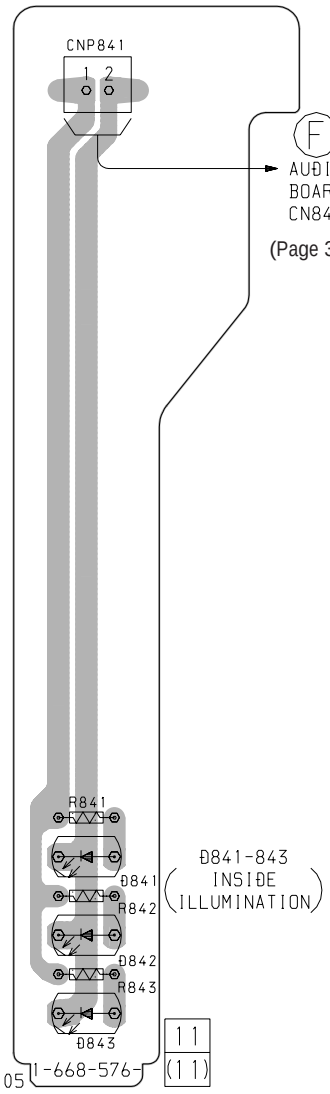




【SW BOARÐ】

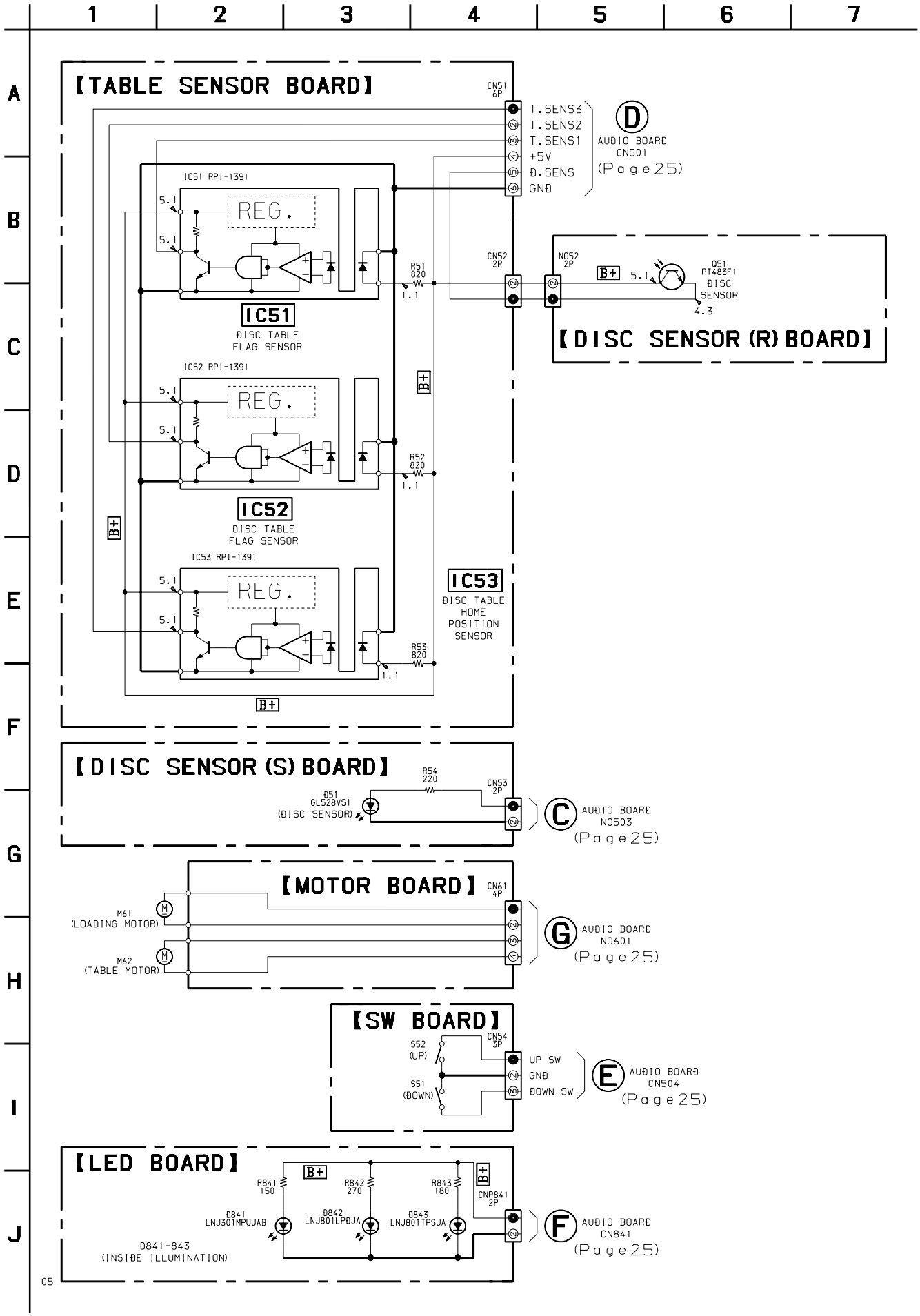


【LEÐ BOARÐ】



7-8. SCHEMATIC DIAGRAM – SENSOR/MOTOR Section –

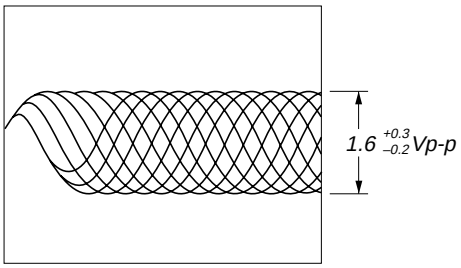
• See page 18 for Note.



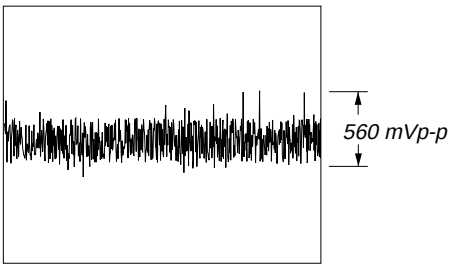
• **Waveforms**

– BD Section –

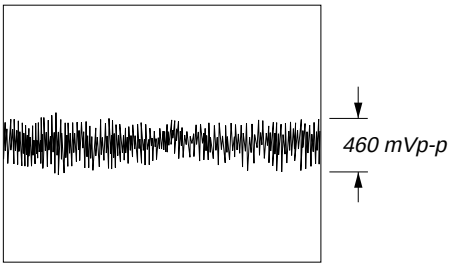
❶ IC101 ㊶ (RFSM) (PLAY MODE)



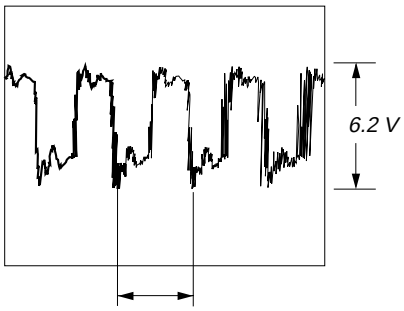
❷ IC101 ⑳ (FE) (PLAY MODE)



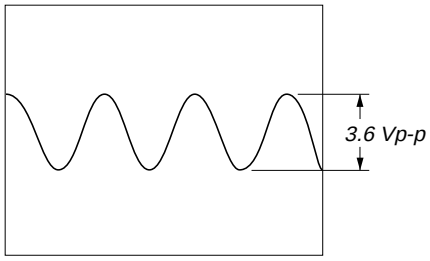
❸ IC101 ⑦ (TE) (PLAY MODE)



❹ IC102 ㉑ (PCK)

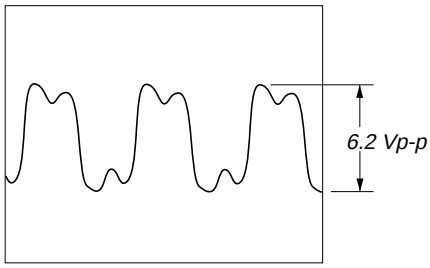


❺ IC102 ㊹ (XOUT)



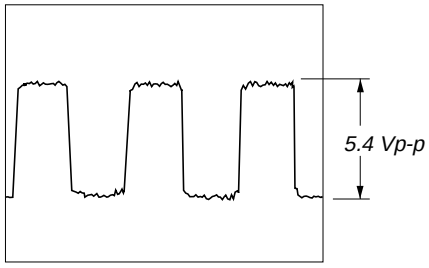
16.9344 MHz

❻ IC102 ㊿ (16M)



16 MHz

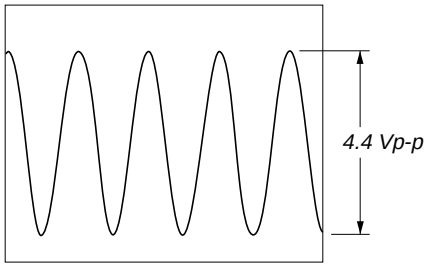
❼ IC102 ㊶ (4.2M)



4.2 MHz

– PANEL Section –

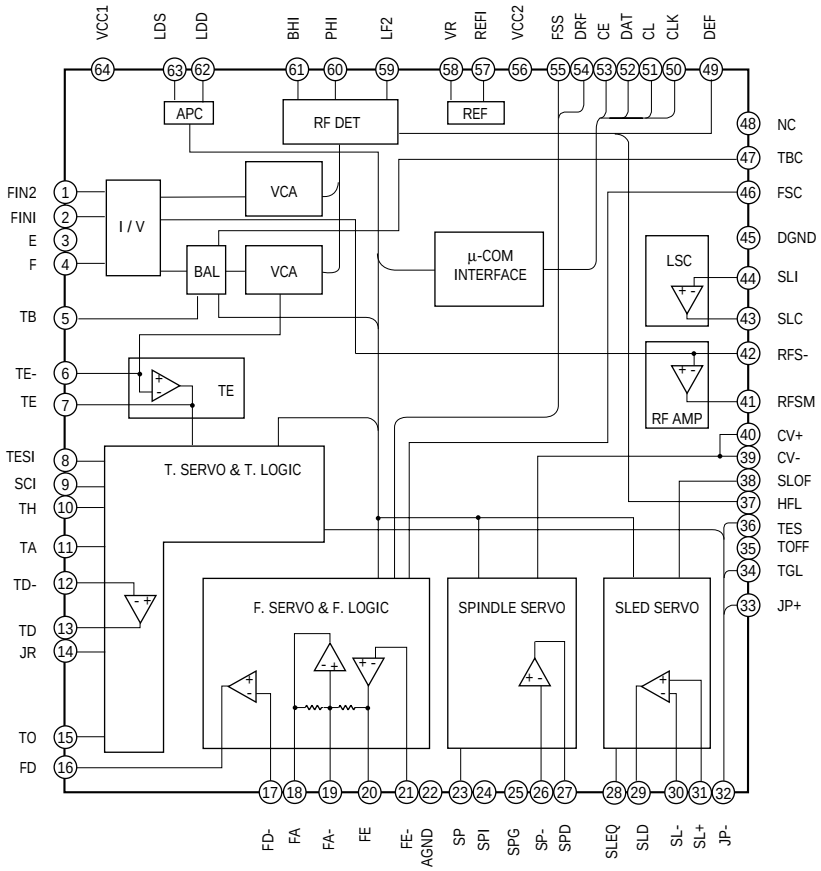
❶ IC801 ㉛ (10MHz)



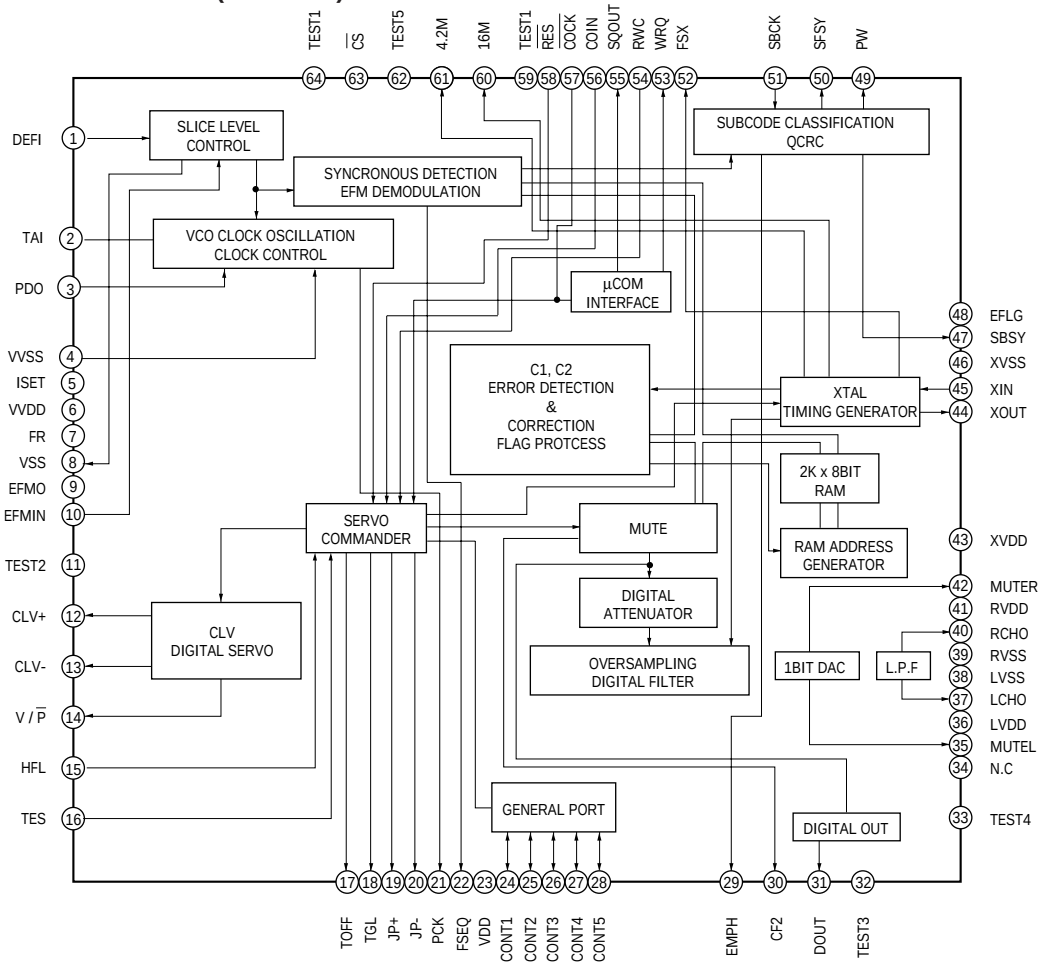
10 MHz

• IC Block Diagrams

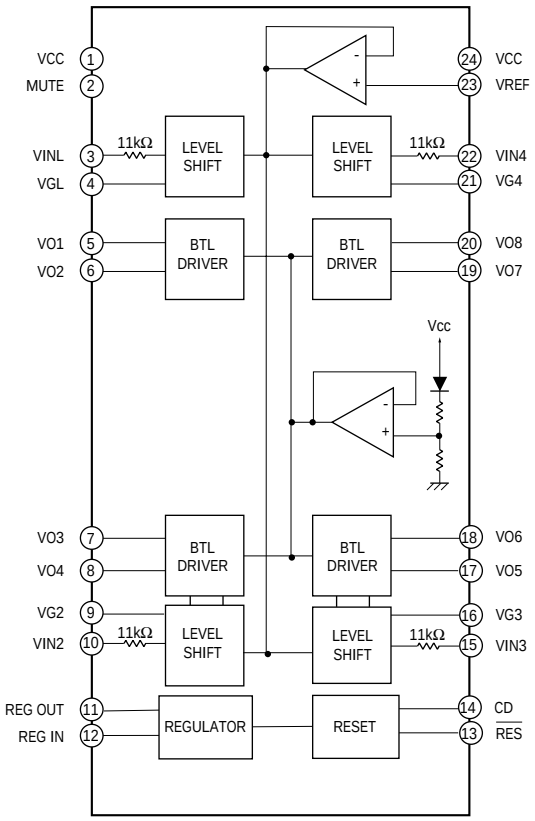
IC101 LA9241M (BD Board)



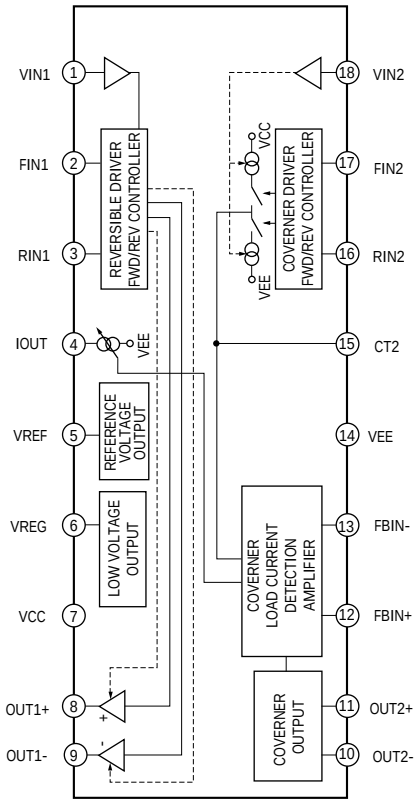
IC102 LC78622E (BD Board)



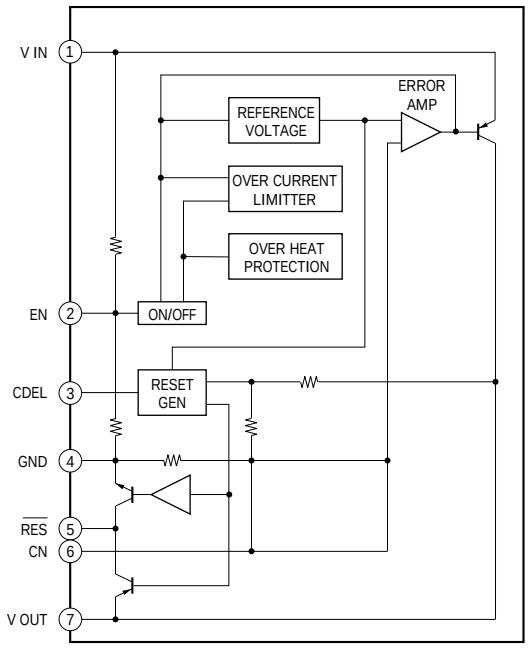
IC103 LA6541 (BD Board)



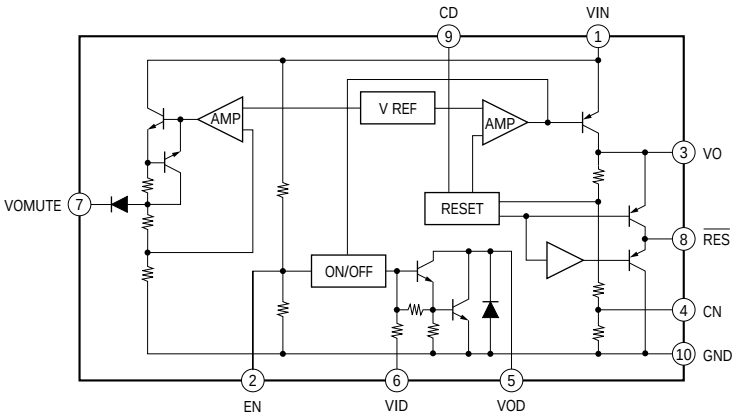
IC601 BA6780 (AUDIO Board)



IC701 LA5602 (AUDIO Board)



IC703 LA5601 (AUDIO Board)



7-9. IC PIN FUNCTION DESCRIPTION

• BD BOARD IC101 LA9241M (RF AMPLIFIER, FOCUS/TRACKING/SLED SERVO)

Pin No.	Pin Name	I/O	Function
1	FIN2	I	Signal input (B+D) from the optical pick-up detector Added with FIN1 to create RF signal, subtracted with FIN1 to create focus error signal
2	FIN1	I	Signal input (A+C) from the optical pick-up detector
3	E	I	Signal input (E) from the optical pick-up detector Subtracted with F to create tracking error signal
4	F	I	Signal input (F) from the optical pick-up detector
5	TB	I	Tracking error signal input for the tracking balance adjustment
6	TE–	I	Tracking error signal (invert signal) input terminal
7	TE	O	Tracking error signal output terminal
8	TESI	I	TES (Track Error Sense) comparator input terminal Tracking error signal is band-passed and input
9	SCI	I	Shock detection input terminal
10	TH	I	Time constant setting terminal for the tracking gain adjustment
11	TA	O	TA amplifier output terminal
12	TD–	I	Creates a tracking phase compensation constant between TD (pin ⑬) and VR (pin ㊽) pins
13	TD	O	Setting terminal for the tracking phase compensation
14	JP	I	Setting terminal for the tracking jump signal (kick pulse) amplitude
15	TO	O	Tracking coil (2-axis device) drive signal output to the LA6541 (IC103), and sled motor drive signal output terminal
16	FD	O	Focus coil (2-axis device) drive signal output to the LA6541 (IC103)
17	FD–	I	Creates a focusing phase compensation constant between FD (pin ⑯) and FA (pin ⑱) pins
18	FA	O	Creates a focusing phase compensation constant between FD– (pin ⑰) and FA– (pin ⑲) pins
19	FA–	I	Creates a focusing phase compensation constant between FA (pin ⑱) and FE (pin ⑳) pins
20	FE	O	Focus error signal output terminal
21	FE–	I	Focus error signal (invert signal) input terminal
22	AGND	—	Ground terminal (analog system)
23	SP	O	Single end output of the CV+ (pin ㊵) and CV– (pin ㊴) pins signal
24	SPI	I	Spindle amplifier input terminal (invert input)
25	SPG	I	Gain setting resistor is connected when the spindle 12 cm mode
26	SP–	I	Works together with the SPD (pin ㉗) to connect to the spindle phase compensation constant
27	SPD	O	Spindle motor (M101) drive signal output to the LA6541 (IC103)
28	SLEQ	I	Sled phase compensation constant is connected
29	SLD	O	Sled motor (M102) drive signal output to the LA6541 (IC103)
30	SL–	I	Sled feeding signal input from the system controller (IC801)
31	SL+	I	Sled feeding signal input from the system controller (IC801)
32	JP–	I	Tracking jump control signal input from the DSP (IC102)
33	JP+	I	Tracking jump control signal input from the DSP (IC102)
34	TGL	I	Tracking gain control signal input from the DSP (IC102) Gain becomes low when TGL is “H”
35	TOFF	I	Tracking off control signal input from the DSP (IC102) Tracking becomes off when TOFF is “H”
36	TES	O	Tracking error signal output to the DSP (IC102)
37	HFL	O	Tracking detection signal output to the DSP (IC102) HFL (High Frequency Level) is used to determine whether the main beam is positioned on a pit or a mirror
38	SLOF	I	Sled servo off control signal input from the DSP (IC102) Rough servo/phase control automatic switching monitor input “H”: rough servo, “L”: phase servo
39	CV–	I	CLV error signal input from the DSP (IC102)

Pin No.	Pin Name	I/O	Function
40	CV+	I	CLV error signal input from the DSP (IC102)
41	RFSM	O	Playback EFM RF signal output to the DSP (IC102)
42	RFS–	I	Works together with the RFSM (pin ㊶) to set the RF gain and the 3T compensation constant for the EFM RF signal
43	SLC	O	SLI (Slice Level Control) is output to control a data slice level of the RF waveform by the DSP (IC102)
44	SLI	I	Input terminal for controlling a data slice level by the DSP (IC102)
45	DGND	—	Ground terminal (digital system)
46	FSC	O	Focus search smoothing capacitor output terminal
47	TBC	I	TBC (Tracking Balance Control) sets a EF balance variable range
48	NC	—	Not used (open)
49	DEF	O	Defect detection signal output to the DSP (IC102)
50	CLK	I	Reference clock (4.2336 MHz) input from the DSP (IC102)
51	CL	I	Command serial clock signal input from the system controller (IC801)
52	DAT	I	Command serial data input from the system controller (IC801)
53	CE	I	Command chip enable signal input from the system controller (IC801)
54	DRF	O	RF level detection signal output to the system controller (IC801)
55	FSS	I	FSS (Focus Search Select) is a switching terminal for the focus search mode (±search/+search for a reference voltage) Not used (open)
56	VCC2	—	Power supply terminal (+5V) (servo system and digital system)
57	REFI	I	Connected to the coupling capacitor for the reference voltage (+2.5V)
58	VR	O	Reference voltage (+2.5V) output terminal
59	LF2	I	Constant setting for a disc defect detection
60	PH1	I	Connected to the capacitor for the RF signal peak hold
61	BH1	I	Connected to the capacitor for the RF signal bottom hold
62	LDD	O	Laser drive signal output to the automatic power control circuit
63	LDS	I	Light amount monitor input of the laser diode (PD)
64	VCC1	—	Power supply terminal (+5V) (RF system)

• **BD BOARD IC102 LC78622E (DIGITAL SIGNAL PROCESSOR, DIGITAL FILTER, D/A CONVERTER)**

Pin No.	Pin Name	I/O	Function
1	DEFI	I	Defect detection signal input from the RF amplifier (IC101)
2	TAI	I	PLL test input terminal Not used (fixed at "L")
3	PDO	O	PLL phase comparison output for external VCO control
4	VVSS	—	Ground terminal (internal VCO system)
5	ISET	I	Connected to a current adjusting resistor for the PDO output
6	VVDD	—	Power supply terminal (+5V) (internal VCO system)
7	FR	I	Adjusts the VCO frequency range
8	VSS	—	Ground terminal (digital system)
9	EFMO	O	Slice level control to EFM signal output
10	EFMIN	I	Playback EFM RF signal input from the RF amplifier (IC101)
11	TEST2	I	Test input terminal (fixed at "L" in this set)
12	CLV+	O	Disc motor control signal output to the RF amplifier (IC101) (3-value output available depending on the command)
13	CLV–	O	
14	V/P	O	Sled servo on/off control signal output to the RF amplifier (IC101) Rough servo/phase control automatic switching monitor output "H": rough servo, "L": phase servo
15	HFL	I	Tracking detection signal input from the RF amplifier (IC101) (Schmitt input) HFL (High Frequency Level) is used to determine whether the main beam is positioned on a pit or mirror
16	TES	I	Tracking error signal input from the RF amplifier (IC101) (schmitt input)
17	TOFF	O	Tracking off control signal output to the RF amplifier (IC101) Tracking becomes off when TOFF is "H"
18	TGL	O	Tracking gain control signal output to the RF amplifier (IC101) (Raises gain when "L")
19	JP+	O	Track jump control signal output to the RF amplifier (IC101) (3-value output available depending on the command)
20	JP–	O	
21	PCK	O	EFM data playback clock monitor output terminal (4.3218 MHz when phase is locked)
22	FSEQ	O	Sync signal detection output terminal ("H" when a sync signal detected from the EFM signal and that generated internally coincide)
23	VDD	—	Power supply terminal (+5V) (digital system)
24	CONT1	I	Guard frame sync input terminal
25	CONT2	I	Sled servo on/off control signal input terminal
26	CONT3	O	Sled servo drive control signal output terminal
27	CONT4	I	Sled limit-in detect switch (S101) input terminal The optical pick-up is inner position when "L"
28	CONT5	O	Not used (open)
29	EMPH	O	De-emphasis control signal output terminal The de-emphasis disc is being played back when "H" Not used (open)
30	C2F	O	C2PO (error condition monitor) signal output terminal
31	DOUT	O	Digital signal output terminal (EIAJ format)
32	TEST3	I	Test input terminal (fixed at "L" in this set)
33	TEST4	I	Test input terminal (fixed at "L" in this set)
34	NC	—	Not used (open)
35	MUTEL	O	Line muting on/off control signal output terminal (for L-ch side) "H": muting on
36	LVDD	—	Power supply terminal (+5V) (L-ch D/A converter system)
37	LCHO	O	Analog audio signal output from the internal D/A converter block (for L-ch side)
38	LVSS	—	Ground terminal (L-ch D/A converter system)
39	RVSS	—	Ground terminal (R-ch D/A converter system)
40	RCHO	O	Analog audio signal output from the internal D/A converter block (for R-ch side)
41	RVDD	—	Power supply terminal (+5V) (R-ch D/A converter system)

Pin No.	Pin Name	I/O	Function
42	MUTER	O	Line muting on/off control signal output terminal (for R-ch side) "H": muting on
43	XVDD	—	Power supply terminal (+5V) (crystal oscillator system)
44	XOUT	O	System clock output terminal (16.9344 MHz)
45	XIN	I	System clock input terminal (16.9344 MHz)
46	XVSS	—	Ground terminal (crystal oscillator system)
47	SBSY	O	C1, C2, single correction, and double correction monitor output terminal Not used (open)
48	EFLG	O	Subcode P to W output terminal
49	PW	O	Subcode frame sync signal output terminal Not used (open)
50	SFSY	O	Write frame clock signal output terminal Not used (open)
51	SBCK	I	Subcode reading clock signal input terminal (schmitt input) Not used (fixed at "L")
52	FSX	O	7.35 kHz sync signal output divided from the crystal oscillation
53	WRQ	O	Subcode Q synchronizing signal output to the system controller (IC801)
54	RWC	I	Command chip enable signal input from the system controller (IC801) (schmitt input)
55	SQOUT	O	Subcode Q output to the system controller (IC801)
56	COIN	I	Command serial data input from the system controller (IC801)
57	CQCK	I	Command serial clock signal input from the system controller (IC801) (schmitt input) Fetching clock input or subcode extracting clock input from SQOUT (pin ㊺)
58	RES	I	System reset signal input from the reset signal generator (IC701) "L": reset For several hundreds msec. after the power supply rises, "L" is input, then it changes to "H"
59	TEST11	O	Test output terminal Not used (open)
60	16M	O	Master clock signal (16.9344 MHz) output terminal Not used (open)
61	4.2M	O	Reference clock signal (4.2336 MHz) output to the RF amplifier (IC102)
62	TEST5	I	Test input terminal (fixed at "L" in this set)
63	CS	I	Chip select signal input terminal Not used (fixed at "L")
64	TEST1	I	Test input terminal (fixed at "L" in this set)

• **DISPLAY BOARD IC801 CXP82324-088Q (SYSTEM CONTROLLER, FL/LED DRIVER, KEY CONTROL)**

Pin No.	Pin Name	I/O	Function
1	TSENS1	I	Disc table flag detect sensor (IC51) input terminal
2	RMIN	I	Remote control signal input from the remote control receiver (IC802)
3	DOOR SW	I	Front cover open/close detect switch (S821) input terminal "L": close, "H": open
4, 5	NC	O	Not used (open)
6	BUSIN	I	Audio bus signal input for the audio bus interface
7	RWC	O	Command chip enable signal output to the RF amplifier (IC101) and DSP (IC102)
8	CQCK	O	Command serial clock signal output to the RF amplifier (IC101) and DSP (IC102)
9	SQOUT	I	Subcode Q data input from the DSP (IC102)
10	COIN	O	Command serial data output to the RF amplifier (IC101) and DSP (IC102)
11	TGL	I	Tracking gain control signal input from the DSP (IC102) Gain becomes low when tracking gain is "H"
12	DRF	I	RF level detection signal input from the RF amplifier (IC101)
13	NC	O	Not used (open)
14	SL+	O	Sled feeding signal (external direction) output to the RF amplifier (IC101)
15	SL–	O	Sled feeding signal (internal direction) output to the RF amplifier (IC101)
16	LOAD OUT	O	Loading motor (M61) drive signal output to the BA6780 (IC601) "L" active
17	LOAD IN	O	Loading motor (M61) drive signal output to the BA6780 (IC601) "L" active
18	TABLE L	O	Table motor (M62) drive signal output to the BA6780 (IC601) "L" active
19	TABLE R	O	Table motor (M62) drive signal output to the BA6780 (IC601) "L" active
20	DOWN SW	I	Inputs the loading out switch (S52) detection signal
21	UP SW	I	Inputs the loading in switch (S51) detection signal
22	DSENS	I	Inputs the disc sensor (Q51) detection signal (A/D input)
23	KEY0	I	Key input terminal (A/D input) (S801, 802 and RE801) CLEAR, CHECK, DISC PUSH ENTER keys input
24	KEY1	I	Key input terminal (A/D input) (S803 to 810) ⊳⊳I, I⊲⊲, ■, ❚❚, ▷, PLUS ONE, REPEAT, PLAY MODE keys input
25	KEY2	I	Key input terminal (A/D input) (S811 to 816) BLOCK FILE 5/4/3/2/1, I/⏻ keys input
26	TEST MODE	I	Setting terminal for the test mode (ADJ mode) (A/D input) "L": test mode, Normally: fixed at "H"
27	CD1/2/3	I	Inputs the CD COMMAND MODE switch (S831) detection signal (A/D input)
28	JOG1	I	Jog dial pulse input of the rotary encoder (RE801) (A/D input)
29	JOG2	I	Jog dial pulse input of the rotary encoder (RE801) (A/D input)
30	RESET	I	System reset signal input from the reset signal generator (IC703) "L": reset For several hundreds msec. after the power supply rises, "L" is input, then it changes to "H"
31	10MHz	—	Connected to oscillator (10 MHz)
32	10MHz	—	Connected to oscillator (10 MHz)
33	GND	—	Ground terminal
34	PLAY LED	O	LED drive signal (D801 ▷) output terminal "H": LED on
35	PAUSE LED	O	LED drive signal (D802 ❚❚) output terminal "H": LED on
36	P1 LED	O	LED drive signal (D803 PLUS ONE) output terminal "H": LED on
37	POWER LED	O	LED drive signal (D804 STANDBY) output terminal "H": LED on
38	ICSW	O	Power on/off control signal output to the LA5602 (IC701) "H": power on, "L": standby
39, 40	NC	O	Not used (open)
41 to 62	P1 toP22	O	Segment drive signal output to the fluorescent indicator tube (FL801)
63 to 65	NC	O	Not used (open)

Pin No.	Pin Name	I/O	Function
66 to 70	G1 to G5	O	Grid drive signal output to the fluorescent indicator tube (FL801)
71	VFDP	I	Reference voltage input for the fluorescent indicator tube (FL801)
72	VDD	—	Power supply terminal (+5V)
73	(VDD)	—	Power supply terminal (+5V)
74, 75	NC	O	Not used (open)
76	BUSOUT	O	Audio bus signal output for the audio bus interface
77	TEST PULSE	O	Table position detect pulse output terminal (for disc sensor alignment)
78	WRQ	I	Subcode Q synchronizing signal input from the DSP (IC102)
79	TSENS3	I	Disc table home position detect sensor (IC53) input terminal
80	TSENS2	I	Disc table flag detect sensor (IC52) input terminal

SECTION 8
EXPLODED VIEWS

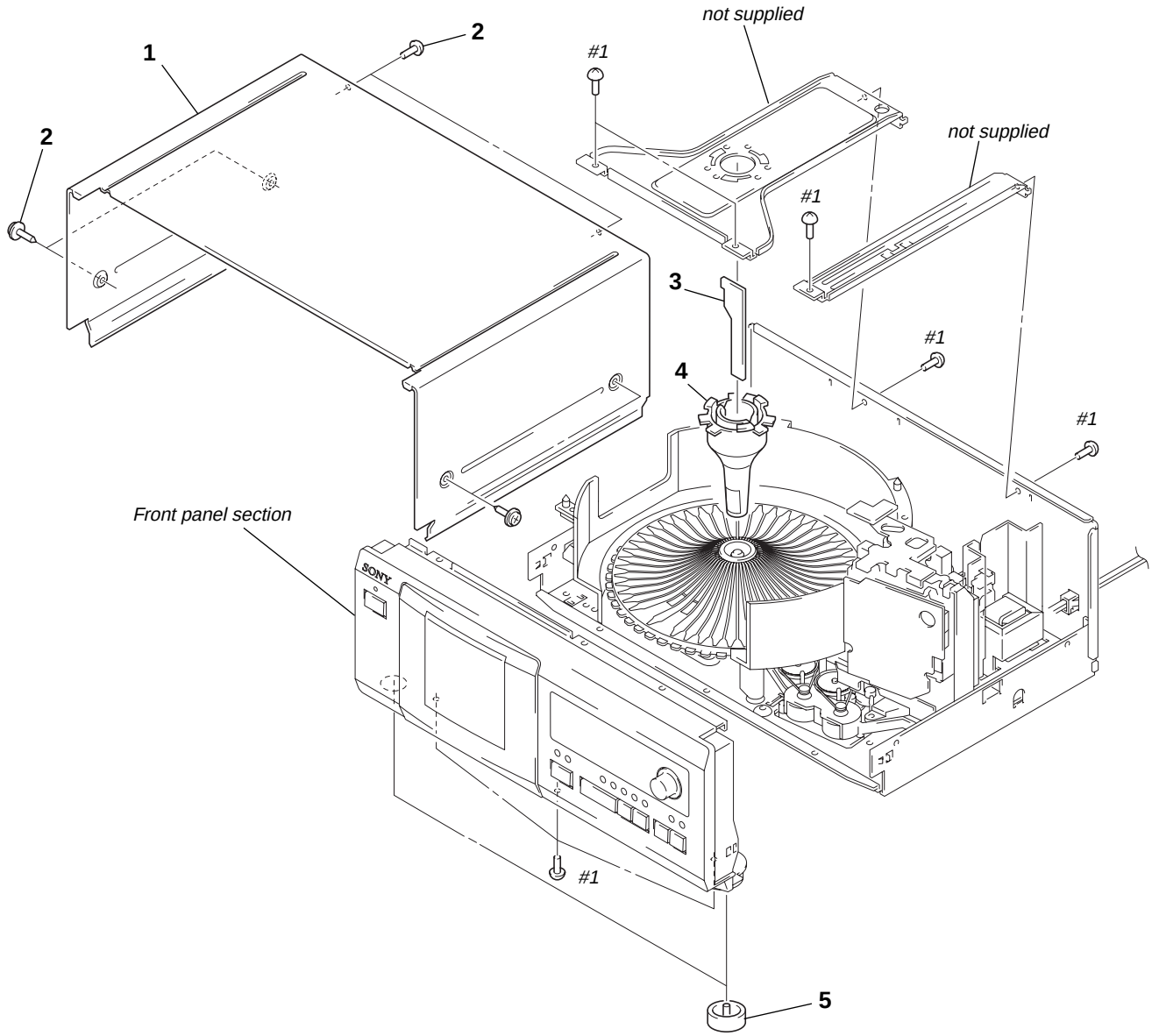
NOTE:

- -XX and -X mean standardized parts, so they may have some difference from the original one.
- Color Indication of Appearance Parts
  Example:
  KNOB, BALANCE (WHITE) . . . (RED)
  ↑ ↑
  Parts Color Cabinet's Color
- Abbreviation
  AED : North Europe
  CND : Canadian
  SP : Singapore
  AUS : Australia
- Items marked "*" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- The mechanical parts with no reference number in the exploded views are not supplied.
- Hardware (# mark) list and accessories and packing materials are given in the last of the electrical parts list.

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

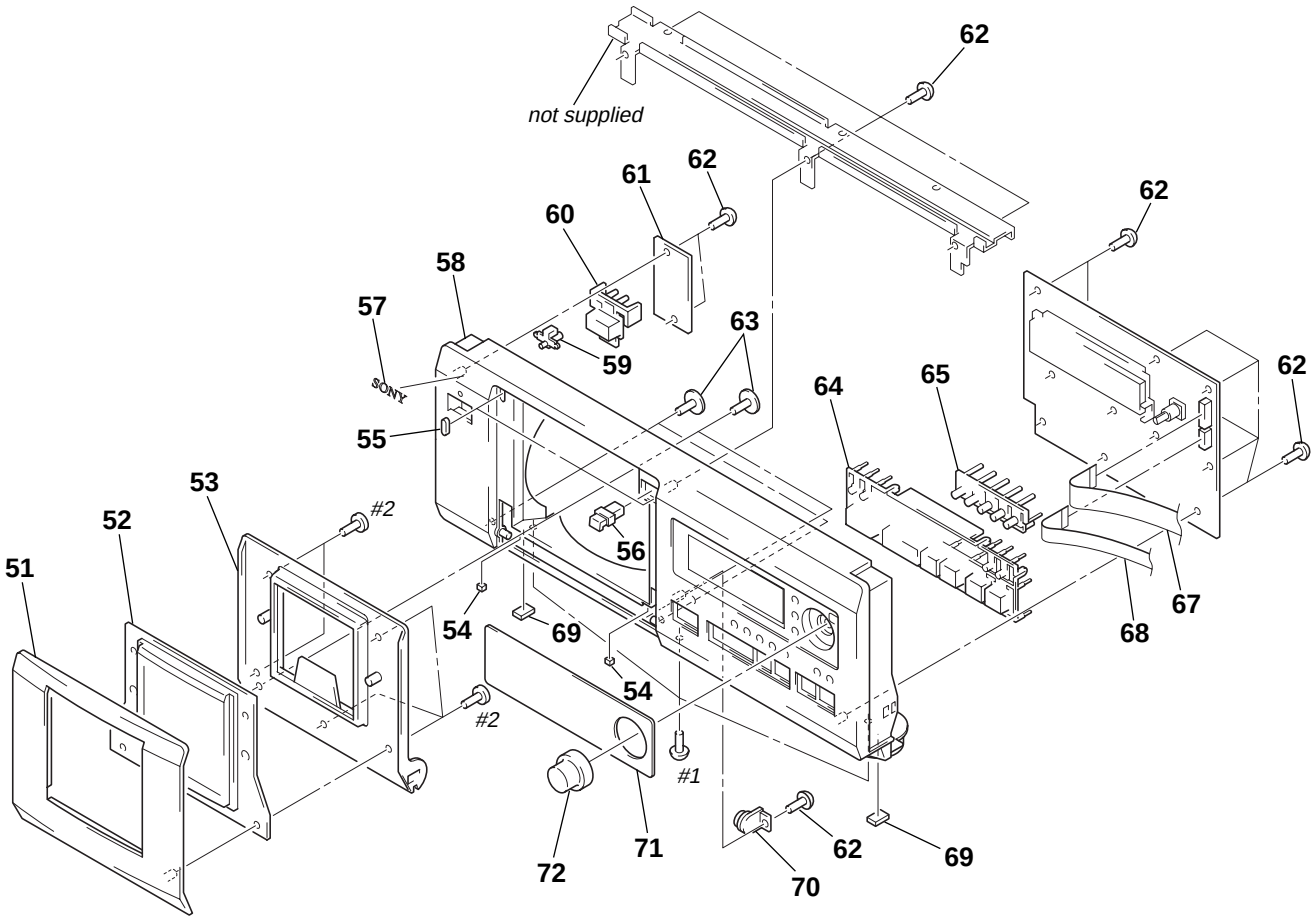
Les composants identifiés par une marque ⚠ sont critiquens pour la sécurité.
Ne les remplacer que par une pièce portant le numéro spécifié.

(1) CASE SECTION



Ref. No.	Part No.	Description	Remark
* 1	4-987-999-11	CASE	
2	3-704-366-01	SCREW (CASE) (M3X8)	
* 3	1-668-576-11	LED BOARD	
4	X-4948-515-1	ILLUMINATION ASSY	
5	4-977-593-01	RING (DIA. 50), ORNAMENTAL	

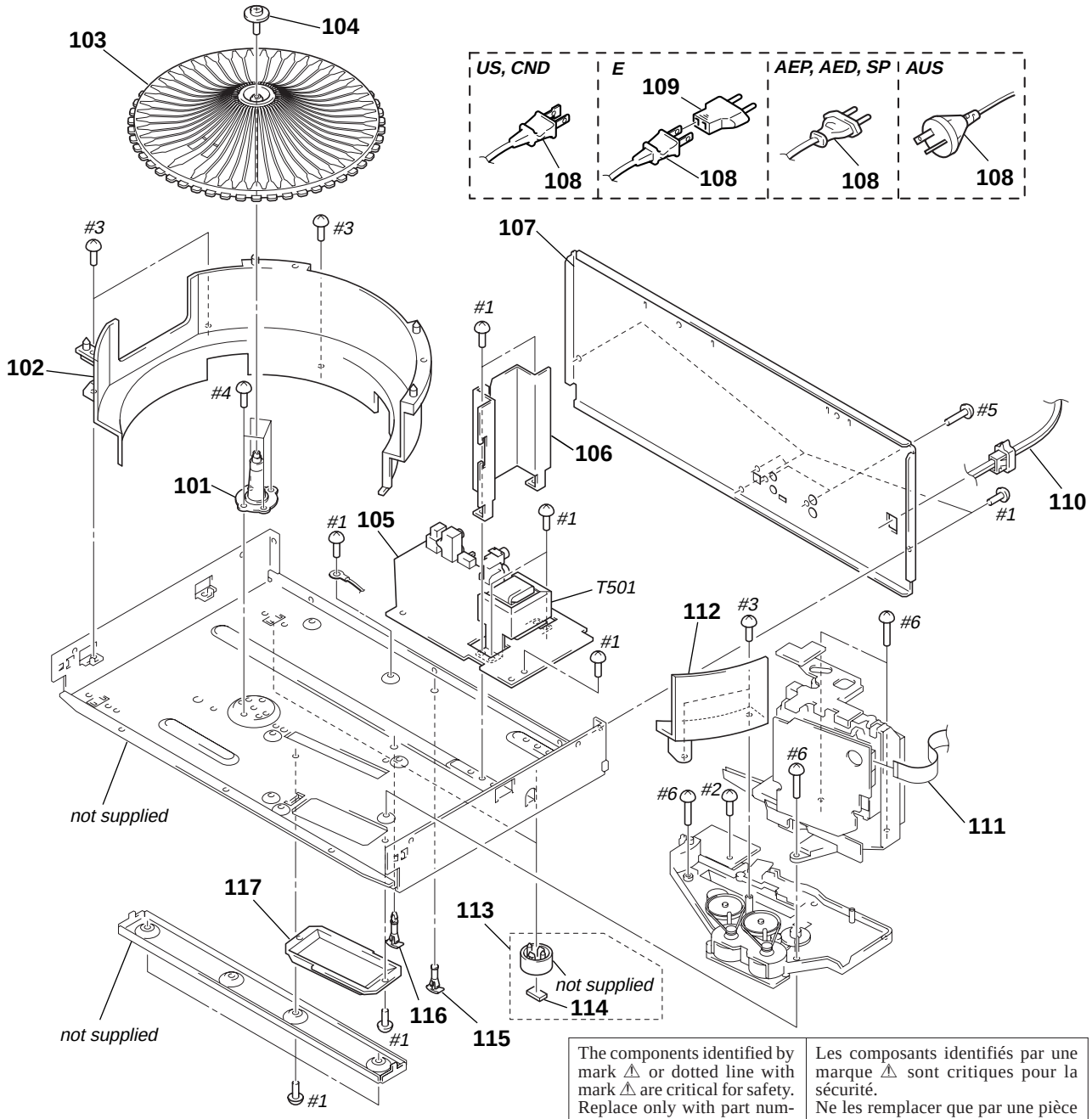
(2) FRONT PANEL SECTION



Ref. No.	Part No.	Description	Remark
51	4-997-019-01	LID (F)	
52	4-997-020-11	WINDOW (LID)	
53	4-997-018-01	LID (R)	
54	4-988-675-01	CUSHION (STOPPER)	
* 55	4-988-674-01	CUSHION (CLOSE)	
56	4-989-312-01	LATCH, NS	
57	3-008-600-01	EMBLEM (5-AR), SONY	
58	4-997-062-01	PANEL, FRONT	
59	4-991-156-01	INDICATOR (POWER)	
60	4-991-152-11	BUTTON (POWER)	
* 61	1-668-574-11	POWER SW BOARD	

Ref. No.	Part No.	Description	Remark
62	4-951-620-01	SCREW (2.6X8), +BVTP	
63	4-933-134-61	SCREW (+PTPWH M2.6X6)	
64	X-4949-357-1	BUTTON (MAIN) ASSY	
65	4-996-359-01	BUTTON (BLOCK)	
* 66	A-4699-958-A	DISPLAY BOARD, COMPLETE	
67	1-773-034-11	WIRE (FLAT TYPE) (15 CORE)	
68	1-765-321-11	WIRE (FLAT TYPE) (9 CORE)	
* 69	4-978-398-21	CUSHION	
70	3-354-963-21	DAMPER	
71	4-987-955-32	WINDOW (FL)	
72	4-987-941-01	KNOB (JOG)	

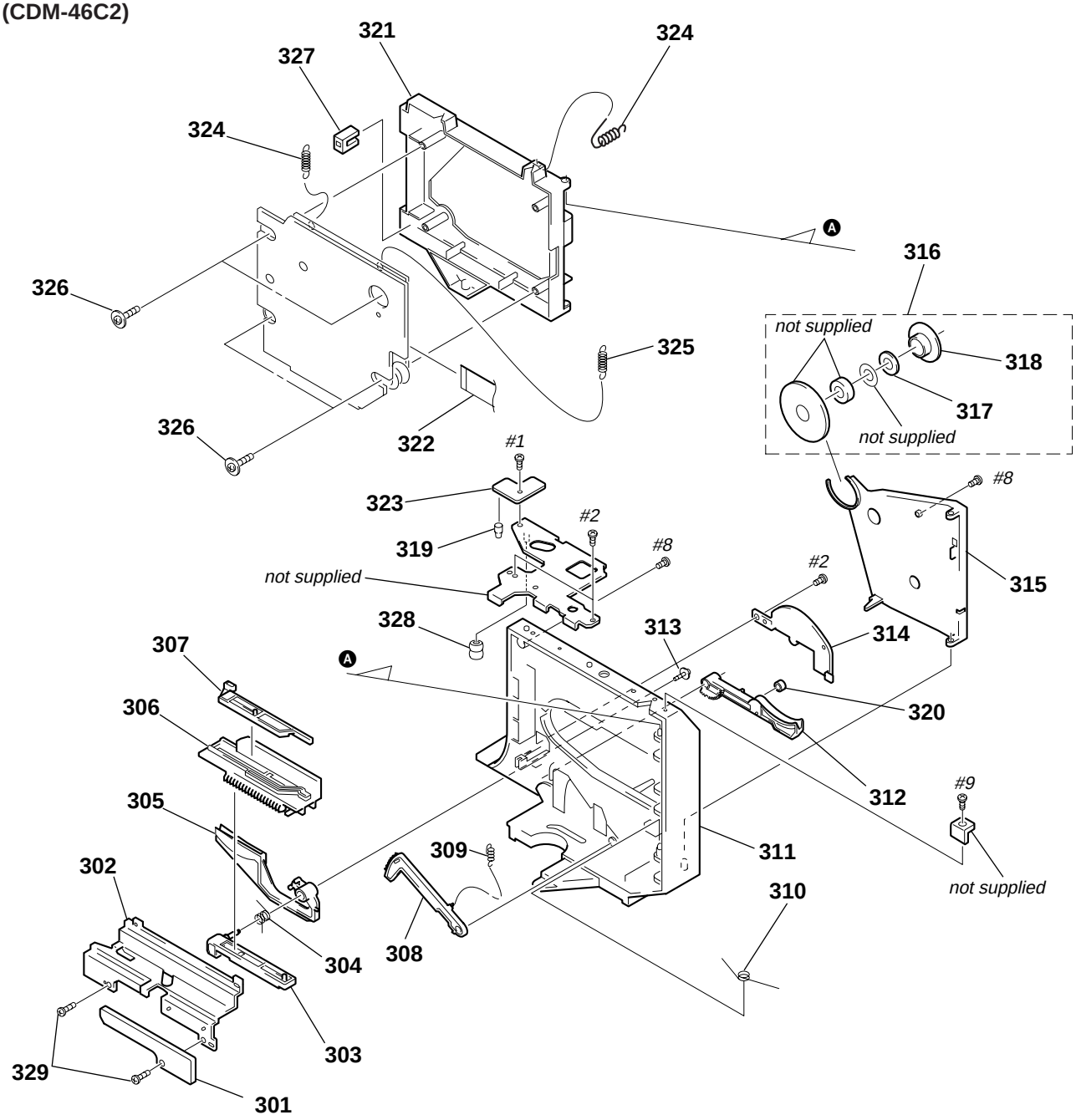
(3) CHASSIS SECTION



The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.	Les composants identifiés par une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

Ref. No.	Part No.	Description	Remark
101	4-988-439-01	HOLDER, TABLE	
102	4-990-028-01	RING (A)	
103	4-988-434-01	TABLE (50)	
104	4-957-577-21	SCREW PTP WH (2.6X8) (DIA. 10)	
* 105	A-4699-916-A	AUDIO BOARD, COMPLETE (AEP, AED, SP, AUS)	
* 105	A-4699-960-A	AUDIO BOARD, COMPLETE (US, CND)	
* 105	A-4699-962-A	AUDIO BOARD, COMPLETE (E)	
* 106	4-991-167-11	COVER, TRANSFORMER	
* 107	4-997-124-01	PANEL, BACK (US)	
* 107	4-997-124-11	PANEL, BACK (CND)	
* 107	4-997-124-21	PANEL, BACK (AEP, AED)	
* 107	4-997-124-31	PANEL, BACK (AUS)	
* 107	4-997-124-41	PANEL, BACK (E)	
* 107	4-997-124-51	PANEL, BACK (SP)	
⚠108	1-558-943-41	CORD, POWER (E)	
⚠108	1-575-651-21	CORD, POWER (AEP, AED, SP)	
⚠108	1-590-926-11	CORD, POWER (US, CND)	
⚠108	1-696-845-11	CORD, POWER (AUS)	
⚠109	1-569-007-11	ADAPTOR, CONVERSION 2P (E)	
110	4-966-266-01	BUSHING (S) (FBS002), CORD (E)	
110	4-966-267-11	BUSHING (FBS001), CORD (EXCEPT E)	
111	1-783-171-11	WIRE (FLAT TYPE) (12 CORE)	
112	4-990-029-01	RING (B)	
113	X-3371-435-1	FOOT (SMALL) ASSY	
* 114	4-978-398-21	CUSHION	
* 115	4-990-895-01	SUPPORT (P TYPE), LSR	
* 116	3-704-198-51	SUPPORT, PC	
* 117	4-988-534-01	COVER, MOTOR	
118	3-703-397-01	STOPPER, WIRING	
⚠T501	1-429-670-21	TRANSFORMER, POWER (US, CND)	
⚠T501	1-429-671-21	TRANSFORMER, POWER (AEP, AED, SP, AUS)	
⚠T501	1-429-672-21	TRANSFORMER, POWER (E)	

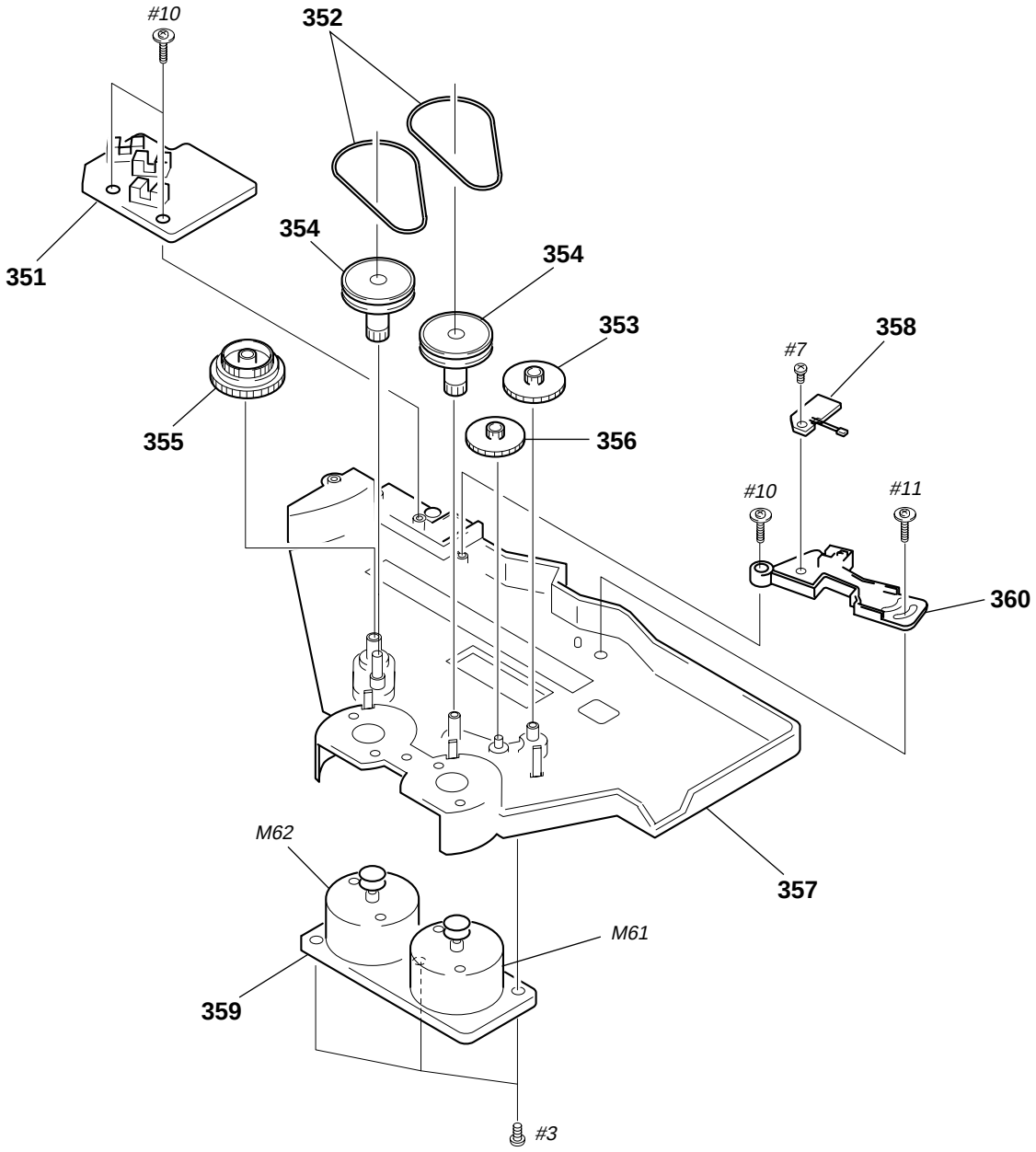
(4) MECHANISM DECK SECTION 1 (CDM-46C2)



Ref. No.	Part No.	Description	Remark
* 301	1-663-975-11	SW BOARD	
* 302	4-988-427-01	COVER, CAM	
303	4-988-420-01	SLIDER (LOADING)	
304	4-988-436-01	SPRING (LOADING), TORSION	
305	4-988-418-01	HOLDER (A), DISC	
* 306	4-988-417-01	SLIDER (CAM)	
307	4-988-433-01	SLIDER (LOCK)	
308	X-4948-020-1	LEVER (LOADING) ASSY	
309	4-988-438-01	SPRING (LEVER), TENSION	
310	4-988-437-01	SPRING (HOLDER), TORSION	
* 311	4-988-416-01	BASE, LOADING	
312	4-988-419-01	HOLDER (B), DISC	
313	4-992-069-01	SCREW (+PTPWH) (M2) (DIA. 7)	
* 314	4-988-454-01	COVER (LEVER)	
* 315	4-988-421-01	HOLDER (MAGNET)	

Ref. No.	Part No.	Description	Remark
316	A-4672-522-A	MAGNET ASSY	
317	4-960-633-11	YOKE (MAGNET)	
318	4-999-139-01	PULLEY (B)	
* 319	4-976-473-01	HOLDER (LED-S)	
320	4-988-431-01	ROLLER (DISC)	
321	X-4948-019-1	HOLDER ASSY, BU	
322	1-777-874-11	WIRE (FLAT TYPE) (16 CORE)	
* 323	1-663-973-11	DISC SENSOR (S) BOARD	
324	4-988-440-01	SPRING (F-1), TENSION	
325	4-988-441-01	SPRING (F-2), TENSION	
326	4-957-577-21	SCREW PTP WH (2.6X8) (DIA. 10)	
327	4-992-413-02	STOPPER	
328	3-910-095-11	RUBBER, VIBRATION PROOF	
329	4-951-620-01	SCREW (2.6X8), +BVTP	

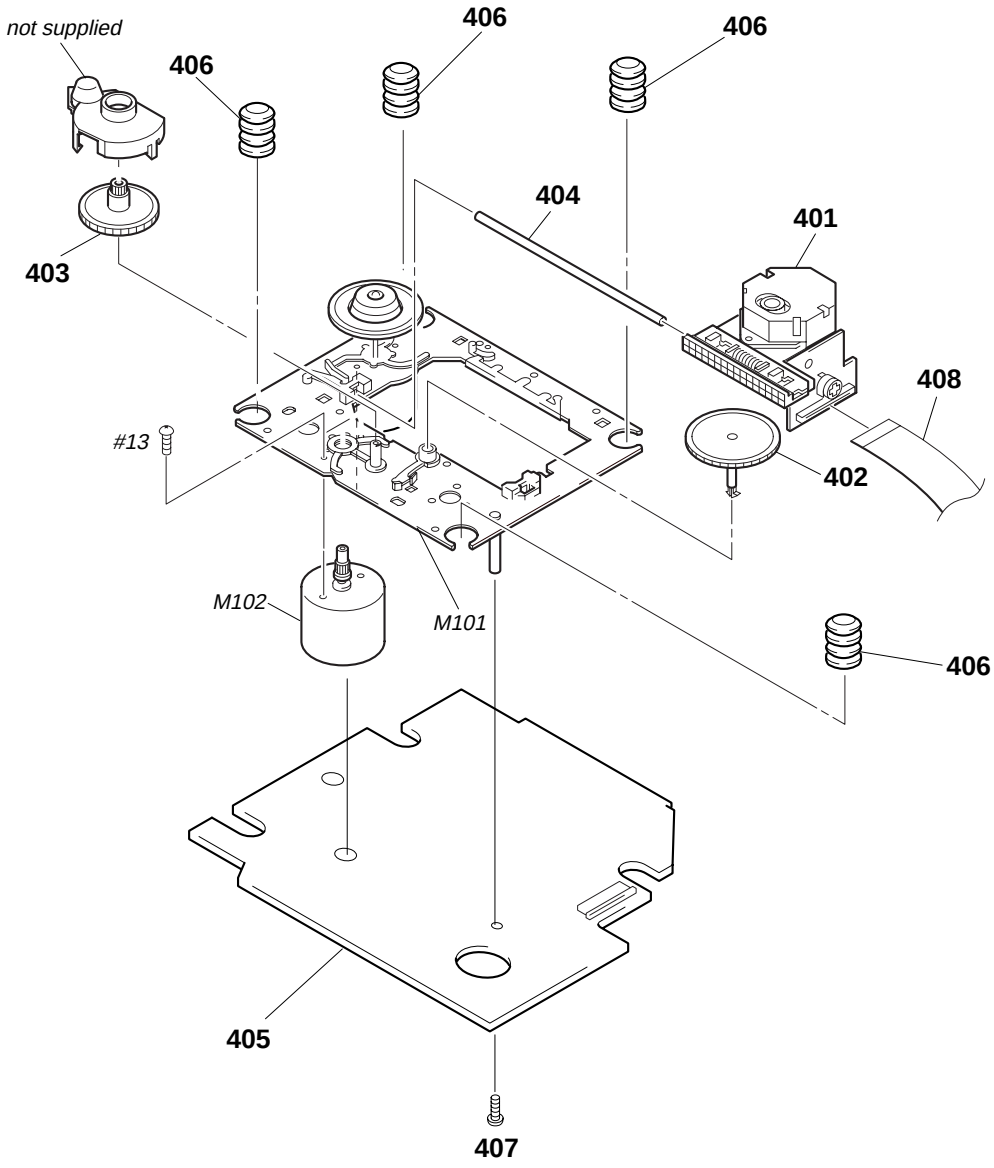
(5) MECHANISM DECK SECTION 2 (CDM-46C2)



Ref. No.	Part No.	Description	Remark
* 351	1-663-971-11	TABLE SENSOR BOARD	
352	4-988-414-01	BELT	
353	4-988-423-01	GEAR (A) (LOADING)	
354	4-988-425-01	PULLEY	
355	4-988-424-01	GEAR (TABLE)	
356	4-988-432-01	GEAR (B) (LOADING)	

Ref. No.	Part No.	Description	Remark
* 357	4-988-426-01	BASE (CDM)	
* 358	1-663-972-11	DISC SENSOR (R) BOARD	
* 359	1-663-974-11	CD MOTOR BOARD	
* 360	4-990-669-01	HOLDER (SENSOR)	
M61	X-4948-434-1	MOTOR ASSY (LOADING)	
M62	X-4948-434-1	MOTOR ASSY (TABLE)	

(6) OPTICAL PICK UP SECTION (KSS-213B/S-N)



The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.	Les composants identifiés par une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

Ref. No.	Part No.	Description	Remark
⚠401	8-848-379-31	OPTICAL PICK-UP KSS-213B/S-N	
402	2-626-907-01	GEAR (A) (S)	
403	2-627-003-02	GEAR (B) (RP)	
404	2-626-908-01	SHAFT, SLED	
* 405	A-4699-968-A	BD BOARD, COMPLETE	

Ref. No.	Part No.	Description	Remark
* 406	4-992-054-01	RUBBER, VIBRATION PROOF	
407	4-996-243-01	SCREW (M2), +PSW	
408	1-777-874-11	WIRE (FLAT TYPE) (16 CORE)	
M101	X-2646-110-1	T, T CHASSIS ASSY (MG) (F) (SPINDLE)	
M102	X-2625-769-1	MOTMR GEAR ASSY (MB) (RP) (SLED)	

SECTION 9
ELECTRICAL PARTS LIST

AUDIO

NOTE:
- Due to standardization, replacements in the parts list may be different from the parts specified in the diagrams or the components used on the set.
- -XX and -X mean standardized parts, so they may have some difference from the original one.
- RESISTORS
  All resistors are in ohms.
  METAL: Metal-film resistor.
  METAL OXIDE: Metal oxide-film resistor.
  F: nonflammable
- Items marked "*" are not stocked since they are seldom required for routine service.
  Some delay should be anticipated when ordering these items.
- SEMICONDUCTORS
  In each case, u: µ, for example:
  uA. . : µA. . uPA. . : µPA. .
  uPB. . : µPB. . uPC. . : µPC. .
  uPD. . : µPD. .
- CAPACITORS
  uF: µF
- COILS
  uH: µH

- Abbreviation
  AED : North Europe
  CND : Canadian
  SP : Singapore
  AUS : Australian

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

Les composants identifiés par une marque ⚠ sont critiquens pour la sécurité.
Ne les remplacer que par une pièce portant le numéro spécifié.

When indicating parts by reference number, please include the board.

Ref. No.	Part No.	Description			Remark
*	A-4699-960-A	AUDIO BOARD, COMPLETE (US, CND)			
*	A-4699-916-A	AUDIO BOARD, COMPLETE (AEP, AED, SP, AUS)			
*	A-4699-962-A	AUDIO BOARD, COMPLETE (E)			
		**********			
		< CAPACITOR >			
	C301	1-162-290-31	CERAMIC	470PF	10%	50V
	C302	1-126-933-11	ELECT	100uF	20%	10V
	C303	1-130-482-00	MYLAR	0.0082uF	5%	50V
	C304	1-106-343-00	MYLAR	1000PF	5%	200V
	C401	1-162-290-31	CERAMIC	470PF	10%	50V
	C402	1-126-933-11	ELECT	100uF	20%	10V
	C403	1-130-482-00	MYLAR	0.0082uF	5%	50V
	C404	1-106-343-00	MYLAR	1000PF	5%	200V
	C501	1-126-933-11	ELECT	100uF	20%	10V
	C504	1-126-933-11	ELECT	100uF	20%	10V
	C505	1-126-962-11	ELECT	3.3uF	20%	50V
	C506	1-126-933-11	ELECT	100uF	20%	10V
	C507	1-161-494-00	CERAMIC	0.022uF		25V
	C511	1-161-494-00	CERAMIC	0.022uF		25V
	C701	1-126-936-11	ELECT	3300uF	20%	16V
	C702	1-126-767-11	ELECT	1000uF	20%	16V
	C703	1-126-968-11	ELECT	100uF	20%	50V
	C704	1-126-965-11	ELECT	22uF	20%	50V
	C706	1-126-963-11	ELECT	4.7uF	20%	50V
	C707	1-126-963-11	ELECT	4.7uF	20%	50V
	C708	1-126-935-11	ELECT	470uF	20%	6.3V
	C709	1-126-963-11	ELECT	4.7uF	20%	50V
	C710	1-126-934-11	ELECT	220uF	20%	10V
	C713	1-126-933-11	ELECT	100uF	20%	16V
	C714	1-126-963-11	ELECT	4.7uF	20%	50V
	C715	1-126-963-11	ELECT	4.7uF	20%	50V
	C716	1-126-935-11	ELECT	470uF	20%	6.3V
	C717	1-126-940-11	ELECT	330uF	20%	16V
	C718	1-126-940-11	ELECT	330uF	20%	16V
	C821	1-162-282-31	CERAMIC	100PF	10%	50V
	C823	1-161-494-00	CERAMIC	0.022uF		25V
		< CONNECTOR >				
*	CN501	1-568-955-11	PIN, CONNECTOR 6P			
	CN504	1-506-468-11	PIN, CONNECTOR 3P			
	CN701	1-580-230-11	PIN, CONNECTOR (PC BOARD) 2P			
	CN801	1-568-834-11	SOCKET, CONNECTOR 15P			
*	CN803	1-568-934-11	PIN, CONNECTOR 7P			
*	CN811	1-568-831-11	SOCKET, CONNECTOR 12P			
*	CN841	1-568-951-11	PIN, CONNECTOR 2P			
		< GROUND TERMINAL >				
	CP2	1-537-771-21	TERMINAL BOARD, GROUND			
		< DIODE >				
	D301	8-719-991-33	DIODE 1SS133T-77			
	D701	8-719-200-82	DIODE 11ES2			
	D702	8-719-200-82	DIODE 11ES2			
	D703	8-719-200-82	DIODE 11ES2			
	D704	8-719-200-82	DIODE 11ES2			
	D705	8-719-200-82	DIODE 11ES2			
	D706	8-719-924-16	DIODE MTZJ-T-77-24			
	D707	8-719-921-54	DIODE MTZJ-6.2B			
	D708	8-719-991-33	DIODE 1SS133T-77			
	D709	8-719-921-42	DIODE MTZJ-5.1A			
	D811	8-719-991-33	DIODE 1SS133T-77			
		< IC >				
	IC501	8-759-634-51	IC M5218AP			
	IC502	8-759-634-51	IC M5218AP			
	IC503	8-749-921-12	IC GP1F32T (DIGITAL OUT OPTICAL)			
	IC601	8-759-356-03	IC BA6780			
	IC701	8-759-061-65	IC LA5602			
	IC702	8-749-011-78	IC BA17807T			
	IC703	8-759-821-93	IC LA5601			
		< JACK >				
	J501	1-770-719-11	JACK, PIN 2P (LINE OUT)			
	J801	1-774-726-11	JACK (S-LINK CONTROL A1)			
		< COIL >				
	L501	1-412-473-21	INDUCTOR 0uH			
	L503	1-410-503-11	INDUCTOR 3.3uH			
	L504	1-412-473-21	INDUCTOR 0uH			
	L505	1-412-473-21	INDUCTOR 0uH			
	L506	1-412-473-21	INDUCTOR 0uH			

AUDIO BD

Ref. No.	Part No.	Description			Remark
L507	1-412-473-21	INDUCTOR	0uH		
		< LINE FILTER >			
⚠L701	1-424-485-11	FILTER, LINE			
		< TRANSISTOR >			
Q301	8-729-141-26	TRANSISTOR	2SC3622A-LK		
Q302	8-729-029-56	TRANSISTOR	DTA144ESA		
Q303	8-729-030-02	TRANSISTOR	DTC144ESA		
Q313	8-729-141-26	TRANSISTOR	2SC3622A-LK		
Q401	8-729-141-26	TRANSISTOR	2SC3622A-LK		
Q402	8-729-029-56	TRANSISTOR	DTA144ESA		
Q403	8-729-030-02	TRANSISTOR	DTC144ESA		
Q413	8-729-141-26	TRANSISTOR	2SC3622A-LK		
Q501	8-729-029-56	TRANSISTOR	DTA144ESA		
Q701	8-729-140-97	TRANSISTOR	2SB734-34		
Q821	8-729-620-05	TRANSISTOR	2SC2603-EF		
		< RESISTOR >			
R301	1-249-413-11	CARBON	470	5%	1/4W
R302	1-249-441-11	CARBON	100K	5%	1/4W
R303	1-249-432-11	CARBON	18K	5%	1/4W
R304	1-249-429-11	CARBON	10K	5%	1/4W
R305	1-249-417-11	CARBON	1K	5%	1/4W
R306	1-247-836-11	CARBON	1.6K	5%	1/4W
R307	1-247-836-11	CARBON	1.6K	5%	1/4W
R311	1-249-421-11	CARBON	2.2K	5%	1/4W
R312	1-249-441-11	CARBON	100K	5%	1/4W
R313	1-249-421-11	CARBON	2.2K	5%	1/4W
R314	1-249-413-11	CARBON	470	5%	1/4W
R315	1-249-417-11	CARBON	1K	5%	1/4W
R401	1-249-413-11	CARBON	470	5%	1/4W
R402	1-249-441-11	CARBON	100K	5%	1/4W
R403	1-249-432-11	CARBON	18K	5%	1/4W
R404	1-249-429-11	CARBON	10K	5%	1/4W
R405	1-249-417-11	CARBON	1K	5%	1/4W
R406	1-247-836-11	CARBON	1.6K	5%	1/4W
R407	1-247-836-11	CARBON	1.6K	5%	1/4W
R411	1-249-421-11	CARBON	2.2K	5%	1/4W
R412	1-249-441-11	CARBON	100K	5%	1/4W
R413	1-249-421-11	CARBON	2.2K	5%	1/4W
R414	1-249-413-11	CARBON	470	5%	1/4W
R415	1-249-417-11	CARBON	1K	5%	1/4W
R501	1-247-807-31	CARBON	100	5%	1/4W
R502	1-249-441-11	CARBON	100K	5%	1/4W
R601	1-249-382-11	CARBON	1.2	5%	1/6W
R602	1-249-382-11	CARBON	1.2	5%	1/6W
R603	1-249-429-11	CARBON	10K	5%	1/4W
R604	1-247-850-11	CARBON	6.2K	5%	1/4W
R605	1-249-429-11	CARBON	10K	5%	1/4W
R606	1-249-428-11	CARBON	8.2K	5%	1/4W
R701	1-249-425-11	CARBON	4.7K	5%	1/4W
R704	1-249-431-11	CARBON	15K	5%	1/4W
R705	1-249-429-11	CARBON	10K	5%	1/4W
R706	1-249-411-11	CARBON	330	5%	1/4W
R851	1-249-429-11	CARBON	10K	5%	1/4W
R852	1-249-425-11	CARBON	4.7K	5%	1/4W

Ref. No.	Part No.	Description			Remark
R853	1-249-429-11	CARBON	10K	5%	1/4W
R854	1-249-393-11	CARBON	10	5%	1/4W
		< VARIABLE RESISTOR >			
RV502	1-241-768-11	RES, ADJ, CARBON 220K			
		< SWITCH >			
⚠S501	1-572-675-11	SWITCH, POWER VOLTAGE CHANGE (VOLTAGE SELECTOR) (E)			
S831	1-571-308-11	SWITCH, SLIDE (COMMAND MODE)			
		< TRANSFORMER >			
⚠T501	1-429-670-21	TRANSFORMER, POWER (US, CND)			
⚠T501	1-429-671-21	TRANSFORMER, POWER (AEP, AED, SP, AUS)			
⚠T501	1-429-672-21	TRANSFORMER, POWER (E)			
		< TEST PIN >			
* TP501	1-564-506-11	PLUG, CONNECTOR 3P			
**********					
*	A-4699-968-A	BD BOARD, COMPLETE **********			
		< CAPACITOR >			
C101	1-163-038-11	CERAMIC CHIP	0.1uF		25V
C102	1-163-038-11	CERAMIC CHIP	0.1uF		25V
C103	1-164-489-11	CERAMIC CHIP	0.22uF	10%	16V
C104	1-163-003-11	CERAMIC CHIP	330PF	10%	50V
C105	1-163-023-00	CERAMIC CHIP	0.015uF	5%	50V
C106	1-110-501-11	CERAMIC CHIP	0.33uF	10%	16V
C107	1-163-989-11	CERAMIC CHIP	0.033uF	10%	25V
C108	1-164-492-11	CERAMIC CHIP	0.15uF	10%	16V
C109	1-164-161-11	CERAMIC CHIP	0.0022uF	10%	100V
C110	1-163-037-11	CERAMIC CHIP	0.022uF	10%	25V
C111	1-163-989-11	CERAMIC CHIP	0.033uF	10%	25V
C112	1-163-009-11	CERAMIC CHIP	0.001uF	10%	50V
C113	1-164-492-11	CERAMIC CHIP	0.15uF	10%	16V
C114	1-164-492-11	CERAMIC CHIP	0.15uF	10%	16V
C115	1-164-232-11	CERAMIC CHIP	0.01uF		50V
C116	1-164-232-11	CERAMIC CHIP	0.01uF		50V
C117	1-163-001-11	CERAMIC CHIP	220PF	10%	50V
C118	1-107-823-11	CERAMIC CHIP	0.47uF	10%	16V
C119	1-164-489-11	CERAMIC CHIP	0.22uF	10%	16V
C120	1-124-234-00	ELECT	22uF	20%	16V
C121	1-164-182-11	CERAMIC CHIP	0.0033uF	10%	50V
C122	1-126-963-11	ELECT	4.7uF	20%	50V
C123	1-163-038-11	CERAMIC CHIP	0.1uF		25V
C124	1-104-396-11	ELECT	10uF	20%	16V
C125	1-126-177-11	ELECT	100uF	20%	10V
C126	1-126-177-11	ELECT	100uF	20%	10V
C127	1-163-989-11	CERAMIC CHIP	0.033uF	10%	25V
C128	1-163-809-11	CERAMIC CHIP	0.047uF	10%	25V
C129	1-110-501-11	CERAMIC CHIP	0.33uF	10%	16V
C130	1-124-443-00	ELECT	100uF	20%	10V
C131	1-163-009-11	CERAMIC CHIP	0.001uF	10%	50V
C132	1-163-038-11	CERAMIC CHIP	0.1uF		25V
C133	1-163-038-11	CERAMIC CHIP	0.1uF		25V
C141	1-163-038-11	CERAMIC CHIP	0.1uF		25V

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.

Les composants identifiés par une marque ⚠ sont critiques pour la sécurité.
Ne les remplacer que par une pièce portant le numéro spécifié.

Ref. No.	Part No.	Description			Remark
C142	1-164-505-11	CERAMIC CHIP	2.2uF		16V
C151	1-107-725-11	CERAMIC CHIP	0.1uF	10%	16V
C152	1-107-725-11	CERAMIC CHIP	0.1uF	10%	16V
C153	1-107-725-11	CERAMIC CHIP	0.1uF	10%	16V
C154	1-163-009-11	CERAMIC CHIP	0.001uF	10%	50V
C155	1-163-227-11	CERAMIC CHIP	10PF	0.5PF	50V
C156	1-163-085-00	CERAMIC CHIP	2PF		50V
C157	1-164-232-11	CERAMIC CHIP	0.01uF		50V
C158	1-163-038-11	CERAMIC CHIP	0.1uF		25V
C159	1-163-101-00	CERAMIC CHIP	22PF	5%	50V
C160	1-163-117-00	CERAMIC CHIP	100PF	5%	50V
C161	1-163-038-11	CERAMIC CHIP	0.1uF		25V
C162	1-163-038-11	CERAMIC CHIP	0.1uF		25V
C163	1-163-038-11	CERAMIC CHIP	0.1uF		25V
C164	1-163-227-11	CERAMIC CHIP	10PF	0.5PF	50V
C165	1-163-227-11	CERAMIC CHIP	10PF	0.5PF	50V
C166	1-104-666-11	ELECT	220uF	20%	10V
C167	1-163-038-11	CERAMIC CHIP	0.1uF		25V
C171	1-163-038-11	CERAMIC CHIP	0.1uF		25V
C172	1-126-177-11	ELECT	100uF	20%	10V
C173	1-124-589-11	ELECT	47uF	20%	16V
C175	1-163-038-11	CERAMIC CHIP	0.1uF		25V
C181	1-104-664-11	ELECT	47uF	20%	16V
C182	1-104-664-11	ELECT	47uF	20%	16V
C183	1-163-003-11	CERAMIC CHIP	330PF	10%	50V
C184	1-163-003-11	CERAMIC CHIP	330PF	10%	50V
		< CONNECTOR >			
CN101	1-770-173-11	CONNECTOR, FFC/FPC 16P			
CN102	1-568-855-11	SOCKET, CONNECTOR 12P			
* CN103	1-568-852-11	SOCKET, CONNECTOR 9P			
		< DIODE >			
D151	8-719-991-33	DIODE 1SS133T-77			
		< IC >			
IC101	8-759-498-93	IC LA9241M			
IC102	8-759-449-65	IC LC78622E			
IC103	8-759-449-66	IC LA6541			
		< JUMPER RESISTOR >			
JW1	1-216-295-00	SHORT	0		
JW2	1-216-295-00	SHORT	0		
JW3	1-216-295-00	SHORT	0		
JW6	1-216-295-00	SHORT	0		
JW7	1-216-295-00	SHORT	0		
JW8	1-216-295-00	SHORT	0		
JW9	1-216-295-00	SHORT	0		
JW10	1-216-295-00	SHORT	0		
		< TRANSISTOR >			
Q101	8-729-119-78	TRANSISTOR 2SC403SP-51			
Q102	8-729-119-78	TRANSISTOR 2SC403SP-51			
Q103	8-729-119-76	TRANSISTOR 2SA1175-HFE			
		< RESISTOR >			
R101	1-216-097-00	RES, CHIP	100K	5%	1/10W

Ref. No.	Part No.	Description			Remark
R102	1-216-093-00	METAL CHIP	68K	5%	1/10W
R103	1-216-093-00	METAL CHIP	68K	5%	1/10W
R104	1-216-093-00	METAL CHIP	68K	5%	1/10W
R105	1-216-093-00	METAL CHIP	68K	5%	1/10W
R106	1-216-097-00	RES, CHIP	100K	5%	1/10W
R107	1-216-097-00	RES, CHIP	100K	5%	1/10W
R108	1-216-068-00	METAL CHIP	6.2K	5%	1/10W
R109	1-216-076-00	METAL CHIP	13K	5%	1/10W
R110	1-216-093-00	METAL CHIP	68K	5%	1/10W
R111	1-216-057-00	METAL CHIP	2.2K	5%	1/10W
R112	1-216-109-00	METAL CHIP	330K	5%	1/10W
R113	1-216-099-00	METAL CHIP	120K	5%	1/10W
R114	1-216-055-00	METAL CHIP	1.8K	5%	1/10W
R115	1-216-689-11	METAL CHIP	39K	0.5%	1/10W
R116	1-216-057-00	METAL CHIP	2.2K	5%	1/10W
R117	1-216-085-00	METAL CHIP	33K	5%	1/10W
R118	1-216-081-00	METAL CHIP	22K	5%	1/10W
R119	1-216-069-00	METAL CHIP	6.8K	5%	1/10W
R120	1-216-085-00	METAL CHIP	33K	5%	1/10W
R121	1-216-059-00	METAL CHIP	2.7K	5%	1/10W
R122	1-216-083-00	METAL CHIP	27K	5%	1/10W
R123	1-216-099-00	METAL CHIP	120K	5%	1/10W
R124	1-216-093-00	METAL CHIP	68K	5%	1/10W
R125	1-216-089-00	RES, CHIP	47K	5%	1/10W
R126	1-216-037-00	METAL CHIP	330	5%	1/10W
R127	1-216-089-00	RES, CHIP	47K	5%	1/10W
R128	1-216-077-00	METAL CHIP	15K	5%	1/10W
R129	1-216-069-00	METAL CHIP	6.8K	5%	1/10W
R130	1-216-113-00	METAL CHIP	470K	5%	1/10W
R131	1-216-113-00	METAL CHIP	470K	5%	1/10W
R132	1-216-065-00	RES, CHIP	4.7K	5%	1/10W
R133	1-216-113-00	METAL CHIP	470K	5%	1/10W
R134	1-216-113-00	METAL CHIP	470K	5%	1/10W
R135	1-216-065-00	RES, CHIP	4.7K	5%	1/10W
R136	1-216-073-00	METAL CHIP	10K	5%	1/10W
R137	1-216-009-00	METAL CHIP	22	5%	1/10W
R138	1-216-089-00	METAL CHIP	47K	5%	1/10W
R151	1-216-045-00	METAL CHIP	680	5%	1/10W
R152	1-216-093-00	METAL CHIP	68K	5%	1/10W
R153	1-216-051-00	METAL CHIP	1.2K	5%	1/10W
R154	1-216-085-00	METAL CHIP	33K	5%	1/10W
R155	1-216-089-00	RES, CHIP	47K	5%	1/10W
R156	1-216-081-00	METAL CHIP	22K	5%	1/10W
R157	1-216-077-00	METAL CHIP	15K	5%	1/10W
R158	1-216-049-11	METAL CHIP	1K	5%	1/10W
R159	1-216-083-00	METAL CHIP	27K	5%	1/10W
R160	1-216-037-00	METAL CHIP	330	5%	1/10W
R161	1-216-073-00	METAL CHIP	10K	5%	1/10W
R162	1-216-037-00	METAL CHIP	330	5%	1/10W
R163	1-216-049-11	RES, CHIP	1K	5%	1/10W
R164	1-216-065-00	RES, CHIP	4.7K	5%	1/10W
R165	1-216-025-00	RES, CHIP	100	5%	1/10W
R166	1-216-025-00	RES, CHIP	100	5%	1/10W
R181	1-216-057-00	METAL CHIP	2.2K	5%	1/10W
R182	1-216-057-00	METAL CHIP	2.2K	5%	1/10W
R183	1-216-073-00	METAL CHIP	10K	5%	1/10W
R184	1-216-073-00	METAL CHIP	10K	5%	1/10W
R191	1-216-025-00	RES, CHIP	100	5%	1/10W

BD | DISC SENSOR (R) | DISC SENSOR (S) | DISPLAY

Ref. No.	Part No.	Description			Remark
R192	1-216-041-00	METAL CHIP	470	5%	1/10W
R193	1-216-041-00	METAL CHIP	470	5%	1/10W
R194	1-216-025-00	RES, CHIP	100	5%	1/10W
R195	1-216-041-00	METAL CHIP	470	5%	1/10W
R196	1-216-025-00	RES, CHIP	100	5%	1/10W
R197	1-216-025-00	RES, CHIP	100	5%	1/10W
		< SWITCH >			
S101	1-572-085-11	SWITCH, LEAF (LIMIT)			
		< VIBRATOR >			
X101	1-577-576-21	VIBRATOR, CRYSTAL (16.9344MHz)			
**********					
*	1-663-972-11	DISC SENSOR (R) BOARD			
		**********			
*	4-990-669-01	HOLDER (SENSOR)			
	7-685-132-19	SCREW +BTP 2.6X5 TYPE2 N-S			
		< PHOTO TRANSISTOR >			
Q51	8-729-926-31	PHOTO TRANSISTOR PT483F1S			
**********					
*	1-663-973-11	DISC SENSOR (S) BOARD			
		**********			
*	4-976-473-01	HOLDER (LED-S)			
		< CONNECTOR >			
* CN53	1-568-951-11	PIN, CONNECTOR 2P			
		< DIODE >			
D51	8-719-055-84	DIODE GL-528VS1 (DISC SENSOR)			
		< RESISTOR >			
R54	1-249-409-11	CARBON	220	5%	1/4W
**********					
*	A-4699-958-A	DISPLAY BOARD, COMPLETE			
		**********			
*	4-987-942-01	HOLDER, FL TUBE			
		< CAPACITOR >			
C801	1-126-933-11	ELECT	100uF	20%	10V
C802	1-161-494-00	CERAMIC	0.022uF		25V
C803	1-161-494-00	CERAMIC	0.022uF		25V
C805	1-126-933-11	ELECT	100uF	20%	10V
C807	1-161-494-00	CERAMIC	0.022uF		25V
C808	1-161-494-00	CERAMIC	0.022uF		25V
C809	1-161-494-00	CERAMIC	0.022uF		25V
C810	1-161-494-00	CERAMIC	0.022uF		25V
C811	1-161-494-00	CERAMIC	0.022uF		25V
		< CONNECTOR >			
CNP801	1-568-834-11	SOCKET, CONNECTOR 15P			
* CNP804	1-568-828-11	SOCKET, CONNECTOR 9P			

Ref. No.	Part No.	Description	Remark
		< LED >	
D801	8-719-018-46	LED SEL3510C-CD (▷)	
D802	8-719-313-50	LED SEL6810A-TH12 (▮▮)	
D803	8-719-313-50	LED SEL6810A-TH12 (PLUS ONE)	
		< FLUORESCENT INDICATOR TUBE >	
FL801	1-517-517-11	INDICATOR TUBE, FLUORESCENT	
		< IC >	
IC801	8-752-891-31	IC CXP82324-088Q	
IC802	8-749-014-66	IC NJL56H400	
		< TRANSISTOR >	
Q801	8-729-119-76	TRANSISTOR 2SA1175-HFE	
Q811	8-729-029-66	TRANSISTOR DTC114ESA	
Q812	8-729-029-66	TRANSISTOR DTC114ESA	
Q813	8-729-029-66	TRANSISTOR DTC114ESA	
		< RESISTOR >	
R800	1-249-427-11	CARBON 6.8K	5% 1/4W
R801	1-249-415-11	CARBON 680	5% 1/4W
R802	1-249-417-11	CARBON 1K	5% 1/4W
R803	1-249-427-11	CARBON 6.8K	5% 1/4W
R804	1-249-415-11	CARBON 680	5% 1/4W
R805	1-249-417-11	CARBON 1K	5% 1/4W
R806	1-249-419-11	CARBON 1.5K	5% 1/4W
R807	1-249-421-11	CARBON 2.2K	5% 1/4W
R808	1-247-843-11	CARBON 3.3K	5% 1/4W
R809	1-249-427-11	CARBON 6.8K	5% 1/4W
R810	1-249-431-11	CARBON 15K	5% 1/4W
R811	1-249-427-11	CARBON 6.8K	5% 1/4W
R812	1-249-415-11	CARBON 680	5% 1/4W
R813	1-249-417-11	CARBON 1K	5% 1/4W
R814	1-249-419-11	CARBON 1.5K	5% 1/4W
R815	1-249-421-11	CARBON 2.2K	5% 1/4W
R816	1-247-843-11	CARBON 3.3K	5% 1/4W
R821	1-249-429-11	CARBON 10K	5% 1/4W
R822	1-249-429-11	CARBON 10K	5% 1/4W
R823	1-249-429-11	CARBON 10K	5% 1/4W
R824	1-249-429-11	CARBON 10K	5% 1/4W
R826	1-249-429-11	CARBON 10K	5% 1/4W
R827	1-249-429-11	CARBON 10K	5% 1/4W
R828	1-249-437-11	CARBON 47K	5% 1/4W
R829	1-249-429-11	CARBON 10K	5% 1/4W
R830	1-247-807-31	CARBON 100	5% 1/4W
R831	1-249-407-11	CARBON 150	5% 1/4W
R832	1-249-410-11	CARBON 270	5% 1/4W
R833	1-247-807-31	CARBON 100	5% 1/4W
R834	1-249-429-11	CARBON 10K	5% 1/4W
R835	1-249-429-11	CARBON 10K	5% 1/4W
R836	1-249-410-11	CARBON 270	5% 1/4W
R837	1-249-429-11	CARBON 10K	5% 1/4W
R838	1-249-429-11	CARBON 10K	5% 1/4W
R840	1-249-425-11	CARBON 4.7K	5% 1/4W
		< ROTARY ENCODER >	
RE801	1-475-543-11	ENCODER, ROTARY (DISC PUSH ENTER)	

Ref. No.	Part No.	Description	Remark
		< SWITCH >	
S801	1-554-303-21	SWITCH, TACTILE (CLEAR)	
S802	1-554-303-21	SWITCH, TACTILE (CHECK)	
S803	1-554-303-21	SWITCH, TACTILE (▷▷I)	
S804	1-554-303-21	SWITCH, TACTILE (I◁◁)	
S805	1-554-303-21	SWITCH, TACTILE (■)	
S806	1-554-303-21	SWITCH, TACTILE (❚❚)	
S807	1-554-303-21	SWITCH, TACTILE (▷)	
S808	1-554-303-21	SWITCH, TACTILE (PLUS ONE)	
S809	1-554-303-21	SWITCH, TACTILE (REPEAT)	
S810	1-554-303-21	SWITCH, TACTILE (PLAY MODE)	
S811	1-554-303-21	SWITCH, TACTILE (BLOCK FILE 5)	
S812	1-554-303-21	SWITCH, TACTILE (BLOCK FILE 4)	
S813	1-554-303-21	SWITCH, TACTILE (BLOCK FILE 3)	
S814	1-554-303-21	SWITCH, TACTILE (BLOCK FILE 2)	
S815	1-554-303-21	SWITCH, TACTILE (BLOCK FILE 1)	
S821	1-762-936-11	SWITCH, LEVER (PUSH OPEN)	
		< VIBRATOR >	
X801	1-579-175-11	VIBRATOR, CERAMIC (10MHz)	
**********			
*	1-668-576-11	LED BOARD **********	
		< CONNECTOR >	
CNP841	1-506-481-11	PIN, CONNECTOR 2P	
		< LED >	
D841	8-719-057-10	LED LNJ301MPUJAB (INSIDE ILLUMINATION)	
D842	8-719-057-09	LED LNJ801LPDJA (INSIDE ILLUMINATION)	
D843	8-719-064-21	LED LNJ801TPSJA (INSIDE ILLUMINATION)	
		< RESISTOR >	
R841	1-249-407-11	CARBON 150 5% 1/4W	
R842	1-249-410-11	CARBON 270 5% 1/4W	
R843	1-249-408-11	CARBON 180 5% 1/4W	
**********			
*	1-663-974-11	MOTOR BOARD **********	
		< CONNECTOR >	
CN61	1-506-469-11	PIN, CONNECTOR 4P	
**********			
*	1-668-574-11	POWER SW BOARD **********	
		< CONNECTOR >	
* CN802	1-568-942-11	PIN, CONNECTOR 4P	
		< LED >	
D804	8-719-057-09	LED LNJ801LPDJA (STANDBY)	

Ref. No.	Part No.	Description	Remark
		< TRANSISTOR >	
Q814	8-729-029-66	TRANSISTOR DTC114ESA	
		< RESISTOR >	
R844	1-249-407-11	CARBON 150 5% 1/4W	
R845	1-249-417-11	CARBON 1K 5% 1/4W	
		< SWITCH >	
S816	1-554-303-21	SWITCH, TACTILE (I/⏻)	
**********			
*	1-663-975-11	SW BOARD *********	
		< CONNECTOR >	
* CN54	1-568-941-11	PIN, CONNECTOR 3P	
		< SWITCH >	
S51	1-571-958-11	SWITCH, PUSH (1 KEY) (DOWN)	
S52	1-571-958-11	SWITCH, PUSH (1 KEY) (UP)	
**********			
*	1-663-971-11	TABLE SENSOR BOARD **********	
		< CONNECTOR >	
* CN51	1-568-944-11	PIN, CONNECTOR 6P	
CN52	1-506-481-11	PIN, CONNECTOR 2P	
		< PHOTO INTERRUPTER >	
IC51	8-749-924-18	PHOTO INTERRUPTER RPI-1391	
IC52	8-749-924-18	PHOTO INTERRUPTER RPI-1391	
IC53	8-749-924-18	PHOTO INTERRUPTER RPI-1391	
		< RESISTOR >	
R51	1-249-416-11	CARBON 820 5% 1/4W	
R52	1-249-416-11	CARBON 820 5% 1/4W	
R53	1-249-416-11	CARBON 820 5% 1/4W	
**********			
		MISCELLANEOUS **********	
67	1-773-034-11	WIRE (FLAT TYPE) (15 CORE)	
68	1-765-321-11	WIRE (FLAT TYPE) (9 CORE)	
⚠108	1-558-943-41	CORD, POWER (E)	
⚠108	1-575-651-21	CORD, POWER (AEP, AED, SP)	
⚠108	1-590-926-11	CORD, POWER (US, CND)	
⚠108	1-696-845-11	CORD, POWER (AUS)	
⚠109	1-569-007-11	ADAPTOR, CONVERSION 2P (E)	
111	1-783-171-11	WIRE (FLAT TYPE) (12 CORE)	
322	1-777-874-11	WIRE (FLAT TYPE) (16 CORE)	
⚠401	8-848-379-31	OPTICAL PICK-UP KSS-213B/S-N	
M101	X-2646-110-1	T, T CHASSIS ASSY (MG) (F) (SPINDLE)	
M102	X-2625-769-1	MOTMR GEAR ASSY (MB) (RP) (SLED)	
M61	X-4948-434-1	MOTOR ASSY (LOADING)	
M62	X-4948-434-1	MOTOR ASSY (TABLE)	
⚠T501	1-429-670-21	TRANSFORMER, POWER (US, CND)	

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.

Les composants identifiés par une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

Ref. No.	Part No.	Description	Remark
⚠T501	1-429-671-21	TRANSFORMER, POWER (AEP, AED, SP, AUS)	
⚠T501	1-429-672-21	TRANSFORMER, POWER (E)	

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ACCESSORIES & PACKING MATERIALS
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	1-475-588-11	REMOTE COMMANDER (RM-DX53)	
	1-558-271-11	CORD, CONNECTION (AUDIO 108 cm)	
	1-777-172-11	CORD, CONNECTION (CONTROL AT) (CND)	
	3-810-765-32	MANUAL,COMMONNESS INSTRUCTION (ENGLISH) (US, AUS)	
	3-810-765-42	MANUAL,COMMONNESS INSTRUCTION (ENGLISH, FRENCH, GERMAN, ITALIAN, SPANISH, DUTCH, SWEDISH, PORTUGUESE, CHINESE) (CND, AEP, E, SP)	
	3-862-222-11	MANUAL, INSTRUCTION (ENGLISH) (US, CND, AEP, E, SP)	
	3-862-222-21	MANUAL, INSTRUCTION (FRENCH, SPANISH, CHINESE) (CND, AEP, E, SP)	
	3-862-222-31	MANUAL, INSTRUCTION (GERMAN, DUTCH, ITALIAN, PORTUGUESE) (AEP)	
	3-862-222-41	MANUAL, INSTRUCTION (SWEDISH, DANISH, FINNISH) (AED)	
	4-981-643-01	COVER, BATTERY (for RM-DX53)	
	4-991-161-01	LET (50), BOOK	
*	4-991-854-01	LABEL (DISC)	

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HARDWARE LIST
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#1	7-685-871-01	SCREW +BVTT 3X6 (S)
#2	7-685-534-19	SCREW +BTP 2.6X8 TYPE2 N-S
#3	7-685-646-79	SCREW +BVTP 3X8 TYPE2 N-S
#4	7-685-872-09	SCREW +BVTT 3X8 (S)
#5	7-685-647-79	SCREW +BVTP 3X10 TYPE2 N-S
#6	7-685-873-09	SCREW +BVTT 3X10 (S)
#7	7-685-132-19	SCREW +BTP 2.6X5 TYPE2 N-S
#8	7-685-107-11	SCREW +P 2X12 TYPE2 NON-SLIT
#9	7-685-535-19	SCREW +BTP 2.6X10 TYPE2 N-S
#10	7-685-134-19	SCREW (+ PTPWH) (2.6X8)
#11	7-621-770-67	SCREW +PWH 2.6X6
#12	7-685-649-79	SCREW +P 3X14 TYPE2 NON-SLIT
#13	7-621-255-15	SCREW +P 2X3

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